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# THE PSYCHIATRIC QUARTERLY

OFFICIAL SCIENTIFIC ORGAN OF THE NEW YORK STATE  
DEPARTMENT OF MENTAL HYGIENE

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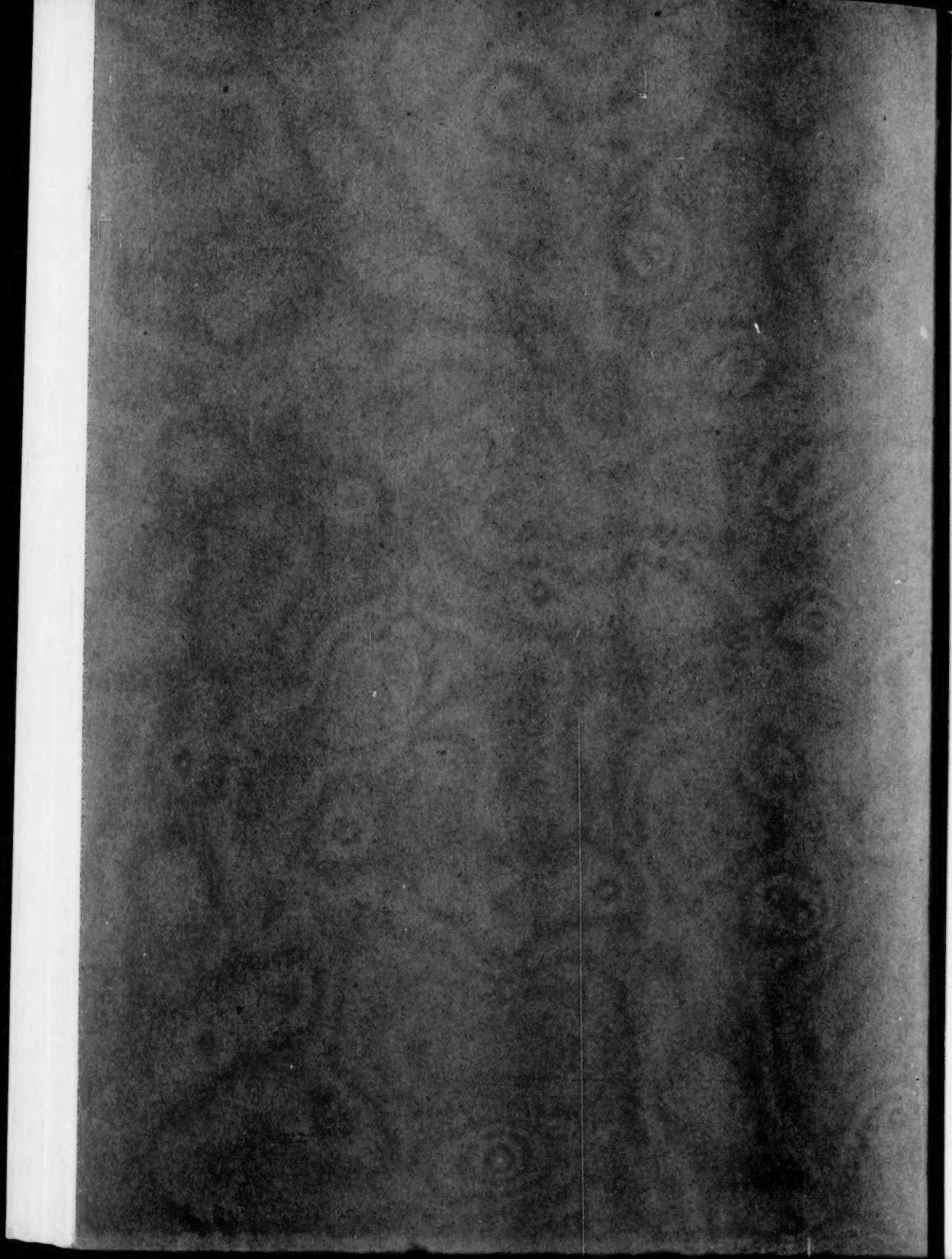
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Published at the State Hospital Press,  
Utica State Hospital, Utica, N. Y.

October, 1943

No. 2





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PUBLISHED BY AUTHORITY OF THE  
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The Psychiatric Quarterly, formerly the State Hospital Quarterly, is the official organ of the New York State Department of Mental Hygiene.

Volumes begin with the January number. Annual subscription rate, \$2.00 in U. S. and its possessions; \$2.50 elsewhere.

Editorial communications, books for review and exchange should be addressed to the editor, Dr. Richard H. Hutchings, Utica State Hospital, Utica, N. Y.

Business communications, remittances and subscriptions should be addressed to the State Hospitals Press, Utica, N. Y.

Entered as second-class matter April 17, 1917, at the postoffice at Utica, N. Y., under the Act of March 3, 1897.

\*Two of the associate editors, Duncan Whitehead, M. D., and James N. Palmer, M. D., are on temporary inactive status, as they are absent in military service.



## POST-HOMICIDAL CONTRITION AND RELIGIOUS CONVERSION\*

BY ARTHUR N. FOXE, M. D.

### THE THEME

This paper is a psychological study of a notorious murder. It examines especially the psychological background of the murderer as presented by himself, and it further studies the psychic and religious transformations he undergoes subsequent to the murder and prior to execution. His life and death reflect some of the forces which in the 1920's were bringing about a national economic, social and psychic upheaval. The material is a series of letters written by him to a friend after his conviction and condemnation to electrocution. The letters are not without a certain special interest today—a period when most of the peoples of the world are involved in mass killing and its consequences.

### THE CRIME

In March of 1927, New York found itself with a new murder on its hands; the murder of Albert Snyder by his wife and Judd Gray. From the news records of the time, it would seem that Ruth Snyder was the somewhat lively wife of a magazine art editor. They had one child. Snyder was a quiet type who was interested in the comforts of home and his hobbies. He permitted his wife considerable freedom, feeling that she was having a good time within reason. Gray, also married, and to all appearances happily so, had one child. He was a traveling corset salesman.

It was the peak of an inflationary period, and the American world had run a little mad with success. About a year and a half before the murder, Mrs. Snyder and Gray had met in a New York hotel. From then on their romance began. They lived actively, registered at hotels under Gray's name and drove around considerably here and there. One gathers from the evidence that Mrs. Snyder previously had made attempts on her husband's life with

\*The author wishes to express his appreciation to THE PSYCHIATRIC QUARTERLY for making available to him the letters which form the material on which this paper is based and for the invitation to him to examine and evaluate them. Thanks are also due to the present owner of the letters for consenting to lend them for scientific study.

gas, etc. Snyder's life was insured for from fifty to ninety thousand dollars in the event of accidental death.

The murder was accomplished by hitting Snyder on the head, while he slept, with a sash weight wrapped in paper. Both Mrs. Snyder and Gray participated actively in the crime. Gray then bound and gagged Mrs. Snyder. Although striking her had been prearranged, he could not bring himself to hit Mrs. Snyder on the head with the sash weight (to lend her subsequent alibi more credence). Her story of what had happened and its chimerical quality broke down, and she implicated Gray.

The trial was a long one and filled six volumes of testimony. The jury returned its verdict in 30 minutes. Gray and Mrs. Snyder were executed the following January. While in jail and the death-house Gray wrote a series of letters to a friend of many years duration. In order to understand these letters more clearly, it is necessary that the crime itself be examined at least a little.

One might conjecture that it was the same old story of free love and too much liquor. Unfortunately, this would not explain very much and would help not at all. The principals involved were a quiet, retiring, credulous, and unwise husband with an active fun-loving wife; on the other hand, there was Gray, a somewhat conventional, reserved yet impressionable and unsophisticated individual, albeit a person who got about considerably. The period in general was one of inflation and prosperity; at the time, there was a considerable loosening of marital ties and drinking throughout the country. The general similarity of the lives of the principals to those of so many other people of the time accounts for the immense popularity of, and public demonstration over, this murder. Murders are not infrequent; they are common. They are described in the papers every day. Very few, however, catch the public fancy, and most drop by the publicity wayside and out of the public eye; general interest is not aroused. Every now and then a murder occurs which seizes the public imagination, and then a great ado is made. In such instances, one only can assume that that murder in particular is the symbolic presentation to the public of the end result of a general way of living. The courtroom reenactment of the crime, the multitudes trying to gain admittance to the court benches, the subdued brabble, the glaring newspaper headlines—all show the public



to be deeply interested and involved. Each individual may assume what will happen if he or she pursues the course being followed.

Very few would be willing to subscribe to the view that, after so notorious a crime as the Snyder-Gray one, alarm would or already had set into the public mind and that a general deflation or depression was in the offing. It is not difficult to see that the concept of "inflation" expresses emotional rather than merely economic inflation and that the inflated individual sooner or later must explode in some way unless he is handled properly and is carefully deflated to his capacity. The danger in inflation is loss of control. Most of the "gory" and covert details of the execution, the aspects which those who favor capital punishment might feel to be the most advantageous element in deterrence, never are printed by the papers. Thus it is participation in a murder, even vicariously, that acts as the purge for human emotions. The technique is comparable with that of the sacrifice and its ritual. It is possible to form an equation and say that murder plus reenactment and public spectacle equals many murders. It would be interesting to study notorious American murders of the past one hundred years from this point of view, but such an examination is well beyond the range of this paper.

Snyder seems to have been a meek man, somewhat dominated by his wife, whom he believed and trusted. When first struck, he awoke and gave the affrighted cry, "Mommie! Mommie! For God's sake! Help me!" Mrs. Snyder apparently had domestic talents, as well, in caring for home and child, but does not seem to have had enough there to care for. Ten or 12 children might have given her a little more ballast. She was energetic enough and undoubtedly urged Gray to drink, as some women do, in order to dominate. She seemed relatively without restraint and was racing with the bit in her teeth. Snyder's great tolerance for his wife's craving for freedom eventually led to his own undoing when freedom came home to roost; unorganized freedom is hazardous. As for Gray, his wife probably did not make any great demands upon him.

Gray was a traveling corset salesman. He thus had something of a roving spirit. Naturally, one wonders how a man gets into the business of selling corsets. One might say that he had scopophilic interests. However, that is but a superficial view. Women use

corsets for the sense of tightness and protection they give, as well as, of course, for cosmetic reasons. There is no part so vulnerable as the abdomen, the more so in women, among whose functions it is to bear children. One who sells corsets would be inclined to help women in their problems of being laced in, secure, and attractive. Certainly, Mrs. Snyder was pretty far out in the world and could have stood a little lacing in. Gray finally does tie her up, but belatedly and after the crime; it is her request as well. She wishes not only to be tied up but to be hit by the sash weight. To be sure, this would help to conceal her complicity in the crime, but there are deeper factors. She could have been hit over the head instead of being tied up. Lacing would be a more fractional discipline and death than a blow on the head. Gray was a little more tender with women. Mrs. Snyder was running amuck and would continue to do so until some powerful force tied her up or slowed her down. Perhaps Gray felt that she was a neglected woman, and, indeed she was, as far as discipline goes. Her nightmarish story to the police was that a big powerful man had overcome and bound her, had robbed the house and must have killed her husband. She probably most craved and needed to be subdued and bound by a powerful force or man. Gray, from his occupation, only assisted women to become subdued and bound, but he himself was not powerful physically or morally; as a matter of fact, he was quite naïve in regard to power, first experiencing it in any great degree with this woman and soon getting well beyond his depth. Not a few men are appetent to sow their wild oats later in life and after marriage; but not having done so in youth, it is wiser to give up such a venture. Thus the omissions and inanity of her husband contributed to Mrs. Snyder's behavior, as some sheltering and inexperience contributed to Gray's.

#### THE AFTERMATH

From May 15, 1927 (two months after the crime), to January 10, 1928 (three days before the execution), Gray wrote 14 letters, shrift in a way, to a friend (a man). During these months, Gray hoped otherwise, but pretty much knew the fate that was in store for him. In another day, his letters might be somewhat dull reading, but in our day when those who are not engaged in killing are

busily biting the other fellow's back and when very few men trust other men unless they have an information on them, the letters take on renewed interest, and one may examine the writings of a man who had no more social axes to grind. The letters present two main and interrelated themes: a gradually waning preoccupation with mundane affairs and a progressive awareness and growth in spiritual, religious convictions. The orientation of the former theme is to the past and present, of the latter to the present and future.

Throughout these letters, Gray repeatedly expresses his appreciation for the way his many friends and acquaintances correspond with him. One may gather the sort of life he led before the crime, for early in his incarceration the retrospective recollection and mental reliving of the past seem to be his main solace. It was a life of the usual pleasures with wife and child, to which were added the displeasures of little business difficulties and the little joys of business successes, the anticipation of road trips, getting into a car and "letting go," interest in high speed driving and the sense of power, billiards, bridge, prizefights, holidays, little incidents, a beauty contestant, the turns of weather, and in the home "good on everything from laundry to floors but draw the line on diapers." Thorough absorption in these matters in one paragraph stands in bold contrast with the process of conversion in the next paragraph—old wine gradually emptying into new bottles. Even as late as October of 1927, Gray shows how slight and juvenile his understanding must have been, for, although elsewhere recognizing that he himself must have been in something of a disturbed mental state or "breakdown," he says, "Too bad Miss — has had a nervous breakdown. Did that come from giving you a couple of orders?" Gray quite frankly admits, even toward the end, that he does not understand how he ever got involved in the chain of events that brought about his undoing. Of course it is difficult to understand that which is largely the result of integrative shallowness, of lack of discernment, and of want of understanding in the first place. Gray's cultural accretion just was not thick enough—but rather of the usual eggshell variety. Such individuals are like children. However, play, pleasure, and life need guidance; Gray actually says, "We all need guiding even then—in later life." In a recog-

dition of these cultural omissions, there is a valid accusation against the social structure of which he was part.

The following two consecutive paragraphs from a letter will give the nature of Gray's thought and style. They show the juxtaposition of the two themes, mundane and spiritual. They also serve as a bridge to the study of the second theme, contrition and conversion. As the letters advance in date, the second theme gradually assumes more depth and importance while the concern with worldly affairs thins. This is notably so in his last letters. "It sure is beautiful out and can picture you scudding over the road doing your 40 to 50 how I wish I could be with you, old pal, as I have been so many times—but I'm in the old front seat in spirit at any rate. How are things coming, picking up any? I do hope so for everyone's sake out there—I can't seem to accustom myself to idleness and being put on a 'confined territory' but I make it oftener than I used to—I've been up and down the main line a million times I guess (in my memory's dreams) instead of every six weeks. What solace and sweet thoughts accompany me in each journey too. I wonder what life here would mean without friends and the recollection of those joyful years that have sped by? Thank God I don't know." The next paragraph is here given: "I have so much to answer for old man, that my every spare moment goes towards Heaven in prayer, that I may bring Him a soul a little cleaner when He calls me. How sweet it would be to live outside again knowing what I do now—instead of living in idleness in here—one could do so much that I have for years left undone."

Gray never had expected to stand trial. He had decided to do away with himself upon arrest. Somehow, this had not come to pass. Later, he was glad that he had not carried out these plans, for an extension of life had permitted him new realizations. In his thoughts of suicide he was very much in the same state as during the crime; all judgment was taken unto himself. Standing trial and undergoing conversion gradually permitted him and society to place judgment in the hands of God and a jury. Suicide must have contained these equivalents—suicide would have been both a judgment of and a mercy to him.

Gray's active interest in religious matters began soon after he was jailed; his first letter of this series is from jail. In a later



letter, he describes how he knelt in the jail chapel trying to tell God everything that was in "his heart," "the awful misery and sacred awe." His first letter is a little more intense than those immediately succeeding; it is from a man who has just undergone the ordeal of trial. Although there is some resignation, the tendency is to bring God into the picture to help him and his family in immediate issues, to accuse others, to get further forgiveness, and to give thanks for the life which he still has. He says, "But I am growing used to pain I guess of all the sorrow and misery I have caused—God forgive me eight weeks ago this morning, what wouldn't I give to live over again that Saturday in the mental condition I'm in today, with no liquor in my system and free from all thoughts but our Heavenly Father. . . . I can but say 'God I am ready for thy judgment.' . . . But thanks be to Christ they can no longer brand me a *liar* too with the other charge. It didn't take courage—all it took was faith in our Almighty Father that I knew I'd have to face as I walked into the chair and I *had* to get right with Him at any price of the public's damnation. . . . I am putting all my burden in God's hands . . . I pray to God I won't go insane that is all I can wish for. . . . I wish and pray to God, old pal, that every bootlegger in the country could be brought to time for selling their damn old poison for I blame more or as much on that stuff that undermined the real me—as I do on this atrocious scheme that I fell into to play the tool and puppet." It is obvious from this first letter that the man is considerably distraught and has made only a first identification with religious ideas as a last refuge. The words are there in their cliché form, but the feelings do not have a truly spiritual quality or ease. They contain more of the early hell-fire asperity of conversion. In this, there is a streak of penitence and contrition.

The second letter, written from prison two weeks later, shows more tranquillity. The statements have a religious tinge, but parallel with this is Gray's pleasure in reminiscing about experiences in the years before he met Mrs. Snyder. He lives in that old world, except for the occasional philosophism, meditation, or anticipation: "Still God is so merciful to let us live on, that we might make the pages of today and tomorrow cleaner and more prayerful till the book be finished. . . . However, I have made my peace with our

Lord and I fear no evil, and death holds no terrors—only shame to the name I bore. . . . Looking forward to meeting Him in Heaven is sweet, not hard.” The reader should know that here again these views are side by side with the full recitation of everyday happenings. The quotations just cited are the only fragments of the sort taken from four full sides of writing. In this second letter, consistent with his precriminotic personality, there is a little less of the censorious hell-fire concept. It will be interesting to note the sequences and relationships of the mundane and the spiritual; at first, as has been shown, vindictiveness and censure, then a more kindly attitude in all points, and, in the closing days, a greater spiritual extension.

The third letter is largely reminiscent but for one paragraph which at once shows resignation and reluctance. This paragraph has already been quoted. From this letter, it must be gathered that Gray’s simple material interests and his thoughtlessness of others precede by years his meeting with Ruth Snyder. Without this groundwork, it is doubtful if alcohol or Mrs. Snyder could have been such traducing forces. The fourth letter gives a rather childlike conception of God, “Our Lord has given me all those pleasant memories to bring here with me to live over as I will and please.” Gray’s concept of religion, thus far, is that of the plain workaday man; with solace but no real theological depth. The fifth, sixth, and seventh letters, carrying through to September, each indicate some further spiritual change in the “peace” that he feels. He now tends to end his letters with “May God bless you.” He questions the possible skepticism of his friend and so reveals that he himself, at least unconsciously, has his fingers crossed a bit. He says, “Don’t think me to be radical or fanatic in my words, I’m not, I am only sincere and living in trust and hope of Him being merciful when my turn shall come.” In these letters, he also is interested in his case, now before the Court of Appeals. The eighth letter is even more attempered and begins to presage a true humility and a deepening sense of values as Gray appreciates elementary realities: “One outside gets to accept sunshine as simply a matter of course but to us it is a rich blessing, as are so many things in life that one takes heed of as we journey thru life.” It is dematerialization, then, that makes one more aware of funda-

mentals. Gray then takes his friend to task for having little disputes about a bridge game rather than examining bigger "misplays" in life.

The next three letters carry through October and mid-November while the time is spent awaiting an answer on his appeal. Each long letter contains a single reference to God, and it is to God that Gray seems to leave the arbitrament. He still connects God considerably with this life: "Just patiently waiting the news of what God ordains my future to be. These days are charged with much thoughtful prayer and faith that keeps me going, together with His strength imparted in my need." There is a great instinctual craving for life but with the feeling that the suspense would be unbearable without some superior force helping to maintain his equilibrium and guide and comfort him. Otherwise, he is like a child, alone and helpless and pressed on all sides. Similar feelings without a helping force, material or spiritual, are not uncommon motivating forces in suicide. This is a clue to how important it is to obtain the most able guidance for the average individual and is an indication that anything less in the social structure, with its easily shifting values, is inadequate and hazardous, not only for the individual but for the whole social structure itself. In matters of leadership, any social structure not only merits the best but cannot survive long without the best. The material of all these letters shows that Gray was not using the "religious angle" to get clemency. The bulk of these letters actually would be damaging from this respect. The fact, too, that he becomes more spiritualized immediately after any blow of reality rather than before shows his behavior is neither foredone nor factitious. He is spiritualized at moments of feeling and not carefully planned thinking.

The twelfth letter is epochal for Gray; in it he tells that he has learned of the adverse decision on his appeal. It is the "fatalizing" blows of reality with no other egress which act as the loosening force that permits him to have further thoughts of God.\* The only other egress was thinking about his early pleasant way of living. He had no other estimable cultural or spiritual outlets. He was relatively untrained in any feeling-overtone except sentiment-

\*The concept of a "fatalizing" force. See "The Life and Death Instincts." The Monograph Editions. 1939. By the present author.

talism, the first and thin religion of the plain man. His spiritual qualities had been so faint as to be invisible. Perhaps, then, it is fitting that Jesus should have been crucified between two criminals; for, after all, Jesus was capable of the exquisite protest for which they were utterly inarticulate, the protest of man against his lot, his ignorance, his untutoredness, his waste. Gray, bewildered and confused, again shows a little of the hell-fire bitterness as a repercussion. Yet more than half this letter shows his conversion rapidly going on. "The newspaper stuff was just so much bunk—as it usually is. I was not surprised at all for somehow I had foreseen the thing, even in my daze from my early days at L. I. What the future may hold God alone knows for it is His will that shall be done—not mine. I trust implicitly in Him with a faith that nothing can shake and my love for Him only magnifies my faith in His mercy and strength by Grace through Jesus Christ my Saviour. I stand ready to obediently answer His call tomorrow with thanks for all His blessings that have been mine in life—among the richest I count all my dear friends, who have been so sincere and true throughout this horrible dream—for it seems more like that, than an actuality of events to me. There is still so much that I cannot understand."

This paragraph runs through all the feelings from ordinary worldly resentment to spiritual resignation and nobility, with a final philosophical, scientific, and Cartesian touch of humble bafflement of the *Que sais-je?* variety. It gives an indication of what the plain man truly is capable of, if only properly guided, taught, counseled. The superior qualities of such an utterance are not sham or begging but are the true feelings of a man who knows "seven weeks from tomorrow night may bring me before His Judgment Seat asking His Mercy." There is an indication that even the man considered the lowliest in society, the murderer, is not very far or different from every other man, up to the highest. This realization should make a man who favors electrocution think twice as to what he is doing. It should make the society of which the murderer is part consider wherein such a man's peers had permitted some neglect in the way of living. Electrocution is no deterrent from crime, whereas certainty of detection is a deterrent. Electrocution is a substitute for social inadequacies.



Once a general wave of unorganized public excitement begins, the end result is some form of war or else actual or vicarious participation in a homicide. Electrocutation hurriedly conceals universal guilt.

In the series the thirteenth letter is dated four days before Christmas and about three weeks before the execution. The handwriting is changed not at all. The letter is occupied largely with religious thoughts. The last quarter is devoted to talk about new babies among his friends, children and the coming holiday, as well as to a mention of the infant Jesus. By this time, conversion is almost complete, and there is a considerable degree of spiritualization. Gray refers to the origins of his turn to religion in the jail chapel soon after arrest, "Asking Him to help me in my crushing need and begging His mercy." The process of religious conversion, therefore, followed three fatal environmental blows—his arrest, conviction, and denial of appeal. In this letter, detachment from worldly interest has grown apace, and Gray stresses the importance of the thought, "Someone on earth still believes in you [himself] as having, not the heart that was so indent [or "evident" (?) Gray's handwriting, ordinarily of unusual clarity, is difficult to decipher here], as this most ghastly, diabolical deed portrays—but something a little more human within them." He is more censorious of himself and his deed at this point and even says "... and am worthy of death too, as far as that goes." Much of his language is identical with that of the Gospel. The spiritual-material separation is almost complete as Gray says, "The wages of sin is death, But the Gift of God is Eternal Life Through Jesus Christ." He makes a note of canny insight into everyday life—"Only death is put away with little thought, as it isn't fitting into the picture in their daily pleasure of life. Yet who can escape it?"

Gray's last letter, written a few days before the execution, finds him pretty much beyond delaceration and at peace. He thanks his friend for all the efforts made for him. He is not hostile to the world, "And who can question their justice of opinion?" He actually makes great efforts to cheer up his friend and feels that death is only a temporary separation. He says his faith is a free gift and not achieved "by any works of mine." This is his last paragraph, "May God's love surround your little families in peace and safety

as I pray success will ever be yours at every corner, just as happiness of heart and mind will meet your coming and going through Jesus Christ our Lord. Amen. In memory may I ever be—Your Pal, Judd.” Gray’s execution was uneventful except for the familiar physical phenomena of death under high voltage electricity. He remained with equipoise and without quavering, and he mumbled orisons on the way to the chair.

#### DISCUSSION

In summing up, it would seem that in the year prior to the murder, life or vital drives gradually had broken all leash in Judd Gray and Ruth Snyder. They were burning the candle at both ends. The fell deed occurred in a sort of maniacal frenzy well beyond any conscious control. All “fatalizing” effects from within were projected on Snyder, and he was subdued; to Gray and Mrs. Snyder, Snyder seemed to be holding back what thin threads of expression of a primitive sort they had as yet not experienced; of course this was a delusion. It has been suggested that this madeap way was not only theirs, but that their way offered society a salient but mawkish means of expression; inflation is but a second wave of war when the first wave of actual war has subsided and resurges. Civilization is tossed about like a piece of cork on the fluctuating waves of the sea and the cave which are still inherent in man.

Arrest, trial and denial of appeal were the only “fatalizing” forces that Gray had had in years; the ordinary social restraints had proven inadequate in a society where death is pretty well denied as a fact. Following each “fatalizing” blow of reality, Gray became aware of other worlds and began to think a little more deeply and broadly. His sense of awe, his heightened sense of awareness\* began in his first days in jail. The three blows helped him to detach himself from worldly and material things except for their embodiment in faith. Any escape from the law was secondary; rather was it a flight into a new world, each attempt at this leaving him with less interest in the everyday form of justice. Upon his faith, hope was built, at first partially in this world and later almost entirely in its spiritual continuation. His critical fac-

\*The present writer first proposed the concept of a “sense of awareness” in January, 1941. American Institute Lectures, “Psychiatry and Its Current Panoramic Position.”

ulties in the beginning were directed at the world about him, and then changed to self-censure; that eventually was converted into the willingness to forgive. His recognition of death was not so dreadful to him as those who are locked in Western culture imagine. Finally, he talks of it with Christ-like faith and something of an Egyptian aplomb.

As Western culture fails to recognize limitations to life, there is eversion and expansion and so wars become "furiouiser" and "furiouiser." It is a runaway world with the vita in the saddle. Eventually, this runaway world will exhaust itself and wonder what it was all about. To say that we live in a world that denies death and favors electrocution might seem like a paradox. It is not so, however. Very little notice is given in the papers, as a rule, to executions. The big moment is that with the pronouncement of the jury and the sentence of death. The period following this is a somewhat perfunctory one in the public eye. The perfunctory attitude may conceal considerable anxiety. Others may conceive of the person to be executed going through all sorts of wordy pleadings, wranglings, tears, hair-pulling, anguish, and what not. To the outsider, other behavior seems very strange. Probably the public imagines the death-house as something of a bedlam. No, the bedlam really is the courtroom. So death really is denied in the details surrounding execution. Execution is carried out so that people will connect it with erroneous ideas of horror and pain. The peaceful departure of Gray might perplex or disillusion those who feel that awaiting execution necessarily is a nightmare; the crime itself might be the nightmare. In more senses than one, life was more painful to Gray than death. Oddly enough, when it comes to the death of the soldier, there is the popular conception of picturing one's own soldiers as dying heroically or with faces wreathed in benignant smiles, whereas the enemy is depicted as writhing in pain prior to his demise. These are distortions of reality and appeasing delusions.

Electrocution represents the prerogative of the state to kill, and eventually to declare war. The victims are inconsequential. The world would be in a sorrier pass than it is if men desisted from killing only because of the danger of death. As has been said, a great deterrent of crime is certainty of detection; this requires a

rather honest society but here one is reminded of the Fable of the Bees: "Fools only strive to make a great an honest hive." Once the public has a wave of inflationary character, war or vicarious indulgence in homicide are the only remedies which in most instances have been successful thus far. Electrocuting by the state is a risk in that it may be extended to people who some may feel have a high nuisance value. Euthanasia is one form of capital punishment inflicted for showing other people that one is in pain; they simply cannot bear seeing it. Death in such instances is not considered an end (denied again), but some sort of blessing.

Thus, spiritualization seems to occur with limitations imposed upon life. These limitations are not necessarily imposed so forcibly by the social structure. One may impose them upon one's self—the reader may be reminded of historical examples. The omissive background of the schizophrenic individual sets up inhibitions which are comparable to other limitations and so he spiritualizes his own private world; his world is so private, personal, and new that it is difficult to understand, or else it has no practical value to others. The psychopath spiritualizes that part of his ego which has become inflated, the persona. It would be out of place to carry this further into studies of other mental diseases at this point. Whether spiritualization is illness or normality depends solely upon the mores of the age. Lest those who feel someone must be blamed raise their heads, we may ask if Ruth Snyder was the *primum mobile* in the nefarious business? No, her problems were very much the same. And so of Gray and Mrs. Snyder and poor Albert Snyder *requiescat in pace*.

25 West 54th Street  
New York, N. Y.



## A PSYCHOSOMATIC STUDY OF MALADIE DES TICS (GILLES DE LA TOURETTE'S DISEASE)

BY MARGARET SCHOENBERGER MAHLER, M. D., AND LEO RANGELL, M. D.\*

*Maladie des tics*, also known as *tic convulsif*, and Gilles de la Tourette's disease, was first described by Gilles de la Tourette, working under the guidance of Charcot, in 1884, when he reported the first case of this unusual and bizarre disorder. This first report was followed in the next year by a description of eight more cases, in the author's major work on the subject, entitled "*Étude Sur Une Affection Nerveuse Caractérisée par l'Incoordination Motrice Accompagnée d'Écholalie et de Coprolalie*." The classical syndrome, as first described, consists first in the appearance, usually at an early age, of a series of abnormal, uncontrollable involuntary movements, of gradually increasing intensity and frequency. These usually begin in the upper part of the body, in an upper extremity, shoulder or face, and spread in the course of time to involve the head and neck, trunk, and finally the lower extremities, so that eventually there may be widespread involuntary movements of the entire body, including kicking and jumping, twisting of the head and neck, quick movements of all the extremities, blinking of the eyes, grinding of the teeth, and projection of the tongue. There then appears the involuntary utterance of an inarticulate cry. This in turn is followed by the onset of echolalia and echokinesia, and finally a feature, which, when it appears, is pathognomonic for this disease syndrome, namely the symptom of coprolalia.

The etiology of this condition has always remained obscure, and has excited many speculative comments in the literature from time to time. The early French writers emphasized the "hereditary taint" of these patients. The psychoneurotic character of those afflicted with this disease was early noted, being first stressed by Charcot. The mental changes were most extensively described by Guinon. Hammond spoke of an "irritative lesion of either the basal ganglia, the cerebral motor cortex, or the pons and medulla"

\*Since this paper was written, Dr. Rangell has been called to active military service with the United States Army Medical Corps, attached to the Air Corps.

as the cause of the disease, while Patrick termed the illness a "sensory-psychomotor neurosis." The present opinion, as expressed by Wechsler, is that "the condition is no doubt based on organic cerebral changes but the nature of the pathology is unknown." Psychoanalytically, tiqueurs in general, as described by Ferenczi, are considered to be highly narcissistic individuals, who invest an undue amount of attention in their own bodies and who are unable to retain stimuli or irritations without immediate defensive innervation.

Coprolalia, the involuntary repetition of obscene utterances, has been thought of by Charcot as merely "a tic of ideas," which was present in these patients beside the motor tic. Frequently the coprolalia was found to be nothing more than echolalia. Thus Meige and Feindel reported a patient who repeated lewd expressions which he heard or expressions which could be so interpreted. These same authors pointed out that "there is not much difference between the coprolalic and the individual whom impatience or anger forces to blaspheme. The first degree of coprolalia consists in the mental presentation of the objectionable phrase. Among those who suffer from obsessions, mental coprolalia is far from uncommon."

Unfortunately the literature does not contain any report of definite postmortem material to settle the question of etiology of this disease. It is, therefore, especially important and necessary to make full use of whatever clinical material is available for study. The authors had the opportunity to observe and study the case to be reported for a period of over two and one-half years, during which time the patient was treated psychotherapeutically and was carefully observed from both the somatic and psychological standpoints. While we believe we are dealing with underlying organic pathology of the central nervous system, this somatic nucleus is acted upon and activated by psychodynamic forces similar to those found operating in cases of definitely functional tics. Another unusual opportunity afforded by the study of this case is to observe the various symptoms of the disease in their early stages of development, *in statu nascendi*, and thus to be in a better position to understand the genesis of the symptoms and their interrelationships.

## REPORT OF A CASE

*History.* Freddie, an 11-year-old Jewish boy, began at the age of seven to display a series of increasing involuntary tic-like movements of various parts of the body. These were followed later by the uncontrollable emission of inarticulate animal-like noises. Echolalia and echopraxia then appeared but only on occasions of great excitement, as at the movies.

The patient is the youngest of three children, the son of Russian-born immigrants, there being an older brother of 19 and a sister of 13. The mother is a highly emotional, neurotic woman, definitely the dominant member of the family, and the father a passive sort, who is a poor provider, irritable and insecure. The home life is a hectic one, with constant quarrels, shouting, and emotional scenes, superimposed upon ever-present financial distress. There is no family history of nervous or mental disease.

Freddie was an unplanned, unwanted child, whose mother, during her pregnancy with him, did everything within her power to induce an abortion. After the birth of the child, the mother felt "he must surely be a cripple," and immediately set about compensating for her conscious as well as unconscious guilt feelings toward him by a markedly overprotective attitude and constant anxieties about his health. The patient was a normal infant, and developed normally in all respects. He was overindulged with food and was always overweight. In the last few years, he has shown a voracious appetite and an unusual degree of insatiability, which have resulted in a marked obesity. An important event, which occurred when the patient was three months old, and which was probably not unconnected with the emotional and psychological environs of the patient's early life, was the fact that at that time the father, who until then had worked steadily as a taxi driver, suffered an automobile accident which resulted in a serious injury to his spine. This caused a permanent work incapacity which has been responsible for the dire financial straits of the family since that time.

The patient had whooping cough, measles, and chickenpox during childhood, with uneventful courses. Most careful and repeated questioning of mother and father did not reveal illness to support suspicion of encephalitis in the patient's anamnesis. He had a tonsillectomy at four and otitis media at five years. His habits were

normal; he was an average student in school, and mixed well with other children. He shared his parents' bedroom, sleeping part of the time with his mother, until the age of two. From then until eight years of age, he slept in a bed with his older brother. The mother states: "They could not get along. Freddie used to throw himself around in bed. That's how it all started."

The patient began at the age of seven to blink his right eye. This seemed at first to be in imitation of a friend of the patient's brother, with whom the latter worked and played. The involuntary winking soon involved the left eye as well, and subsequently movements began to occur in other parts. There developed in succession "twitching movements of the head to the left," "shaking of the right hand and right arm," "puckering up of the lips, and protrusion of the tongue." When trying to fall asleep, "his whole body would shake" and he often would have to be taken out for a walk by the mother at 2 a. m. to relieve his restlessness. The patient then began to make involuntary noises imitating a cat or a dog, sounds which were distressing and resulted in much difficulty at school. During periods of great excitement, it was noted that the patient would imitate the words and actions of others in an uncontrollable manner, as for example when at the movies. The symptoms have progressed, although there have been variable periods of relative quiescence.

After a two-week hospitalization on the neurological service of the Mt. Sinai Hospital, ward Z—Chart No. 17377, 6/28/40 to 7/15/40, diagnosis, psychogenic tic, the patient was referred to the Mental Hygiene Clinic of that hospital in August, 1940, at which time regular observation and psychotherapeutic visits were instituted. After an initial therapeutic success, aggravation of the symptoms occurred in November, 1940, following an accident in which the patient cut one of his fingers and the mother, in her haste to secure aid, fell down a flight of stairs, necessitating treatment for both of them. The patient was admitted to the Children's Service of the New York State Psychiatric Institute on June 2, 1941. Observations of both periods of psychotherapy, i. e., that of Mt. Sinai Hospital and the Psychiatric Institute are utilized and condensed in the following.

*Examination.* Physical examination showed the patient to be an obese white boy with the general appearance of the Fröhlich habitus. He was 61 inches tall and weighed 116 lbs. He spoke in a gruff, hoarse barking voice, reminiscent of the voice of a manic patient who has been indulging in excessive use of the vocal cords. There was a slight inversion of the terminal phalanx of the right small finger due to recent injury. The testes were descended but, perhaps due to the obesity, the testes and penis gave the impression of being undersized. There was an occasional transient, blowing systolic murmur at the apex. The heart and lungs were otherwise negative. Blood pressure was 110/72.

Neurological examination, except for the involuntary movements, showed only the following positive findings: slight dysidiadochokinesis on the left; deep reflexes of the lower extremities more marked than those of the upper; left knee jerk greater than the right. There were many involuntary movements, occurring almost in spurts or paroxysms, varying considerably in their frequency and severity, and alternating with periods of relative quiescence. These movements included rapid, lightning-like successive turning movements of the head to the left, followed by forceful turning of the head back to the midline. There occurred lifting of the eyebrows, wrinkling of the forehead, and an occasional winking of the left eye. Often the lips were involuntarily puckered, with the lower lip thrust far forward. The tongue was sometimes forcefully protruded. More rarely, there was a forward thrusting movement of the right shoulder and arm and still less often of the left arm.

*Laboratory findings.* The patient's temperature was checked regularly for a month during June and early July, 1941, and showed almost a daily elevation to a level between 100°-101°. This was accompanied by an increase in the pulse-rate to about 110. No other concomitant physical findings could be elicited. This elevation generally occurred about midday. Respirations always remained normal, between 18 and 20. On one occasion, the temperature reached 103° with no physical findings to explain it.

A record of the intake and output during this period showed no diabetes insipidus. Intake was generally around 2,000 cc., while the output varied between 300 and 1,200 cc., usually because of excessive sweating. X-rays of the skull, chest and lumbar spine were

negative. Blood count and urine were normal. The glucose tolerance test was normal. Blood urea-nitrogen was 9.2 mg. per cent. The blood Wassermann was negative. The electroencephalogram, as interpreted by Dr. Bernard L. Pacella, was within normal limits, though there were many movement artefacts.

The revised Stanford-Binet test showed the patient to have an I. Q. of 118. The Rorschach examination will be reported.

*Course and observations under psychotherapy.* The patient was an extremely affable, courteous, and obedient youngster during his treatment period in the Mental Hygiene Clinic of Mt. Sinai Hospital as well as in his stay on the ward, well-liked by his fellow-patients as well as by the personnel. He adjusted himself quickly and completely to the ward requirements, and showed a ready co-operation and compliance. He was fair and extremely polite to others to almost a self-denying degree, in contrast to the behavior of some of the other superficially more aggressive boys.

The patient's choice of games, however, for use in the psychotherapy, consisted of games of war, action, destruction, and aggression in general. When left alone and observed, he almost invariably played war games, going through the various motions of attack and defense in a gradually increasing orgy of excitement. He flew planes, bombed and destroyed whole cities, annihilated squadrons of soldiers, crashed trucks and other vehicles. His chief ambition was to be a pilot. The patient's play with planes, tanks, guns and soldiers was usually accompanied by a continuous series of voluntarily-produced sound effects appropriate to the particular activity of the moment. There was a remarkable facility for imitation displayed in these sounds and noises, to which the patient abandoned himself with complete oblivion to his surroundings. The humming of an airplane motor, the pitter-patter of anti-aircraft guns, the frightening decrescendo of a crash landing, the eerie wails of sirens, the roar of artillery fire, all were reproduced with an earnest participation and an exceptional and practiced ability. A striking fact was the qualitative similarity between the playful emission of these conspicuously pleasurable aggressive sounds and the involuntary grunting, groaning, barking noises which constituted one of the symptoms of the patient's present illness.



Freddie's relationship to his physician was typical of his entire social pattern of adjustment. He made a quick and ready attachment, as he did to the occupational therapist, the nurses, teachers and all others. He was always anxious to please, was agreeable and compliant, yet this attachment was rather superficial and spurious. He liked all alike, and displayed great caution in expressing a preference. When his doctors were changed, he liked them all "exactly alike." This attitude was clearly seen in attempting to evaluate the patient's emotional relationships in his family constellation, where the motivations for this type of behavior could be seen in their origins. The patient ostensibly "liked all in his family the same." If he had his wish, he would have \$90,000, which he would divide up in gifts equally among his father and mother, sister and brother. This impartiality and seeming placidity was belied by the varying emotional moods, the alterability of motor symptomatology, and other behavior of the patient. His facial expressions indicated a turmoil of changing inner emotions and conflicts. Especially during the early period of observation in Mt. Sinai Hospital, there was a great deal of facial mimicry, his mood and expression changing many times in even a few minutes. The patient's involuntary movements were subject to great fluctuation, and it was soon seen that his entire behavior varied according to the fluctuations in the relationship between Freddie and his brother Gilbert. The latter played perhaps the most important rôle in the development of the patient's psychic conflicts, and a markedly ambivalent attitude existed between the two brothers. Nothing was more important for Freddie than to receive the approval of Gilbert, and this was usually the sole factor in determining the mood of the patient when returning to the hospital after a week-end visit home. When he returned happy, cheerful and contented, it was usually with the report "Gilbert likes me again. He talked to me a lot, let me read his comic books, etc.," and when depressed and subdued, there usually was a comment, "I didn't see Gilbert much this week-end. He went around with his friends. He never stays at home much any more." These latter moods were attended by an increase in the patient's involuntary movements.

The involuntary movements varied a great deal, in their number, intensity and frequency. They were increased during periods of

excitement, such as in the games described in the foregoing, and in periods of resentment and of "feeling badly." One could almost use their presence as a barometer to indicate a period of displeasure and suppressed hostility. The movements, if they could be interpreted as having any meaning, gave the impression of defiance, with subsequent retraction and attempts at denial by the patient. Thus, he would pucker his lips and stick out his tongue, only quickly to pull it back in. His head would turn quickly to the side in a series of "denying" or "no" gestures, and then would be forcefully pulled back to the midline. His shoulders twitched in a shrugging, "I don't care" gesture, and his right arm and hand went out in a pushing, self-protective, rejecting movement, then were pulled back. The involuntary noises, which accompanied these movements to a variable degree, likewise had a partly aggressive, partly appeasing and pleading character. They varied from animal-like noises, such as calling of birds, whining and plaintive barking of dogs, growling, and crowing, to sounds which bore a marked similarity to the fighting, active noises produced voluntarily by the patient in his war-play. The periods of excitement were also accompanied by vasomotor phenomena, such as sweating, and alternating flushes and pallor.

The patient has to this date not shown the symptom of manifest coprolalia. However, a few points of great interest in this regard may be mentioned. Freddie's reaction to the profane utterances and obscenities to which he could not help but be exposed on a children's psychiatric ward, was extreme and painful. He showed a great deal of embarrassment, discomfort and anxiety. He kept his own vocabulary spotlessly free of any dubious words and shunned and avoided such expressions by others. This behavior was quite foreign and abnormal in view of Freddie's "rough and tumble" social and cultural background. In discussing with his physician the question of "bad words," the patient would become anxious and defensive. "Please, don't talk about that," he would say, "I hate to hear that. That's why I don't like to play with the boys on my block." It soon came out that the patient was defending himself against the latent existence of "mental coprolalia." "I never say anything worse than 'damn,' although much worse words used to come into my mind," confessed the patient. For the mo-

ment he has successfully repressed them. "They used to come especially when I was angry with my brother, but they don't come any more. I hate to even think of them."

The patient's strongest instinctual affective drives were directed toward his older brother, who was, on the one hand, devotedly loved and admired, and on the other hand, feared and hated. It was while sharing his bed with this brother, who was obviously the pride and hope of the family, that Freddie first began to "throw himself around," and his illness started. Ever since the separation of the two from the common bed, as was first advised at the Mt. Sinai Mental Hygiene Clinic, the patient displayed peculiar rituals before going to sleep. The door to Gilbert's room had to be closed, because of the patient's fear of a "bogey man" in there, and it was often necessary for his mother to attend him before he could fall asleep. The patient's fantasies and dreams which were first divulged early in the psychotherapy, usually contained a mean older brother, a spy or traitor, sometimes even a robber, and as a counterpart a young boy or brother. There was usually a happy ending, either a reconciliation between the two, or a punishment of the evil one. The ambivalence between the two brothers was mutual. Freddie's original tic, a twitching of the eye, was strongly reinforced by imitating a friend of Gilbert's, with whom the latter spent most of his time, thus by identification to obtain some of the desired attention from Gilbert. On the other hand, Freddie would often compulsively "get in his brother's way" and provoke the latter to unfriendliness and even abuse. "Gilbert can't study because of my movements," the patient would complain, "and might even fail in school." In an interview with Gilbert, the latter disclosed that, while on the one hand he is considerably provoked and irritated by his brother's noises and movements and blames these for his failure in school, on the other hand he cannot refrain, when coming home late, from opening the door to Freddie's room and listening to the sounds and mumblings being emitted while Freddie is falling asleep.

Freddie was markedly addicted to the quest for excitement, and participated in this eagerly and actively. He went to the movies as often as he could, and devoured as many comic books and action stories as he could find. In these situations, he best showed his

marked tendency to imitation and identification, which resulted in echolalia and echopraxia. He identified in an active way with the masculine hero images of these pictures and stories. During an observation at a movie in March, 1941, he was seen to engage in a virtual paroxysm of imitation phenomena, echolalia and echopraxia. He repeated words and phrases, and threw himself around in accordance with the action taking place on the screen.

He related with interest stories of Gilbert "and his sweet-hearts," showing the tendency to identify both actively with his big brother, and passively with the latter's girls.

The patient often exhibited symptoms of quite a different nature than those described, and they should be mentioned. There were phenomena resembling the conversion symptoms of conversion hysteria. Most marked was a tendency to nausea with occasional vomiting, particularly in the mornings. He compared this with similar symptoms which have occurred in both his sister and brother, both of whom have been examined and told "there was nothing wrong with their stomachs." He occasionally had vague minor complaints, such as headaches, and aches and pains in various places. He showed quite hypochondriacal concentration upon his body. The vasomotor symptoms, flushing, sweating and pallor, have been mentioned.

During the early period of observation, the tics were diffuse and widespread, increasing promptly with excitement to paroxysms of generalized movements, and were accompanied by involuntary vocal utterances and echo-phenomena. At the time of this writing, the tics seemed fewer in number, but also seemed more isolated from awareness and demarcated from the rest of the personality, i. e., more automatic in character; they were not so directly related to exciting external stimuli as formerly. The tics no longer tended to inundate, during periods of great excitement, the generalized body musculature. The vocal tics were less marked, with only an occasional short, quick bark remaining. The echo phenomena, echolalia and echopraxia, have been absent for some time. In contrast to the vivid facial mimicry formerly seen, the patient's expression at the present time has become more flattened and strained. That is to say that for the time being the defense inner-vations seem to have attained the upper hand against the impulses.

The change in the patient's symptoms and reactions can perhaps be more vividly brought out by a comparison of two observations made in the movies, one in March, 1941, and the other in October, 1942. On both occasions, the patient witnessed pictures of great excitement and adventure. On the first occasion, he participated wildly in the action on the screen, throwing himself about in generalized violent bodily movements, and imitating in sound and action the various actors. He would constantly repeat the words and phrases spoken; echolalia and echopraxia were extreme. On the second occasion, however, though he sat with wrapt attention, he was calm and quiet. Only an occasional turning movement of the head could be noted. There were no imitation phenomena, either vocal or motor.

Repeated neurological examinations did not reveal change in the neurological status.

The patient was discharged from the Psychiatric Institute in June, 1942. Since that time, he has continued to be followed in the outpatient department of that institution and at present is under psychoanalytic treatment.

#### COMMENT

The question of etiology of the condition here described is clouded with confusion and lack of specific knowledge. Unfortunately, in the absence of precise anatomico-pathologic data, it is necessary to rely and make the utmost use of whatever clinical and laboratory data and observation can be amassed. A study of the material presented by the case here reported will, in the opinion of the authors, make at least some slight contribution to this question.

The bizarre character of the disorder becomes less incomprehensible when it is realized that the cardinal symptoms, namely, the involuntary movements, the inarticulate cry, the echolalia, and the coprolalia, though they seem to be disconnected, are all disorders of the expressional motor function, gesticulatory and vocal. The symptoms of the disease appear, from this standpoint, to be uniform in character, and to have a common basis. The patient's reactions to environmental and internal stimuli are uncontrollably increased with regard to mimicry, gesture, motor expression and vocal func-

tions. It seems as if the system of expressional motility were in a state of permanent overexcitation, independent of the normal inhibiting and controlling centers.

The question as to anatomical localization of the expressional function in the central nervous system is a complicated and disputable one, and is beyond the scope of this communication. Although there are many conflicting theories, it may be stated that in general it is considered that gesture, expression mimicry, and other primary automatic movements are related to and mediated by the striopallidal system. Thus, C. and O. Vogt believe that the central control of the expressive movements is vested in the striatum and pallidum. The primitive automatic movements which are mediated by these structures partake, as elementary partial movements, in the higher coordinated movements initiated by the motor cortex. There is a direct cortical influence upon the striatum by virtue of a corticothalamo-striopallidal connection, through which the newer cortex acts, through the thalamus, upon the phylogenetically older striopallidum. Bender and Schilder believe that the total integration of motility is in general more closely correlated to the subcortical rather than to the cortical motor apparatus. Homburger states that the entire complicated system of expressional functions is based upon the coordination and cooperation of the corticopyramidal and extrapyramidal systems and connections.

The infant and young child are characterized by a strong motility urge, and react to the environment with widespread and prompt expressional movements. Homburger attributes this characteristic of the immature organism to an "increased psychic responsiveness of the extrapyramidal automatisms." During the course of growth and maturation, this primitive motor urge becomes checked and is transformed to more purposeful and socially useful activity. This is accomplished by the gradually increasing control by higher centers over the originally predominant subcortical structures. In the psychological sphere, it is likewise true that the high degree of gratification which is obtained by the immature organism from undifferentiated motor expression is reduced and channelled as the individual matures so that he soon learns to check his immediate activity in favor of a more integrated performance. This process requires as much repression and control in the de-



velopment of purposeful activity as does any other form of habit training in the psychosomatic maturation process. Maturity in this sphere would thus imply a capacity to retain psychic energy and stimuli within the organism, and to control the outward expressional behavior so that it would be most useful to the individual in his relation to the environment.

The patients with *maladie des tics* seem to be far from enjoying psychosomatic maturity in this sphere. Instead, they show almost a veritable "incontinence of the emotions." Instead of retaining psychic energy in any inner state of tonus, they rather discharge this in immediate and automatic expressional activity. This characteristic of tiqueurs is attributed by Meige and Feindel to "deficient and faulty development of the cortical associative pathways and subcortical anastomoses."

A significant and interesting fact in this connection, and one worthy of attention is the high increase in the frequency of tics at the age of about six to seven years, which is also the usual age of onset of the *maladie des tics*. This corresponds to the beginning of the latency period of Freud, or to Kanner's period of "communal socialization." It is at this period, the onset of school age, when under normal circumstances the repressive force against the infantile impulses is at its height, and is usually successful in solving the normal conflict between the instinctual cravings and the demands of society and reality, that disturbances of the expressional motor system, of either a transitory or permanent nature, are most likely to arise. Thus Boncour's study, which was based on 1,759 youngsters, showed that of the 475 between the ages of two and six, only 7 per cent suffered from tics, while of the 1,514 children from seven to 13 years of age, there was an incidence of tics of 25 per cent. The statistical findings of Wilder and Silbermann concur with those of Boncour. The increase in the frequency of tics and other motor disturbances at the age of six or seven was pointed out too by Ferenczi. Fleischner, quoting Still's analysis of 100 cases, points out that the peak in the age incidence of tics is between six and eight years. Thus, it has been statistically found, but not sufficiently evaluated, that involuntary expressional movements are particularly apt to break through as symptoms precisely

at the time when under normal circumstances the repressive force against them is at its height. The significance of this fact will be further discussed.

An analysis of the reported case, which has been observed and studied continually now for some 30 months, will show that, although the writers assume there is a definite underlying organic nucleus, the manifestations have nevertheless been largely psychologically determined. The mental mechanisms follow in their psychodynamics very closely, although in a quantitatively increased fashion, the genetic patterns which are encountered in definitely functional tics. Furthermore, this case affords an unusual opportunity to study the various tics and other manifestations of this disease *in statu nascendi*.

To consider first the evidence which would point to the presence of organic disease of the central nervous system, there are several factors which make this more than suggestive, and which account for the fact that a number of the neurologists who have seen this patient have felt that there is somatic pathology. Constitutionally, the patient is of the Fröhlich, hypopituitary type. The presence of a constant daily elevation of the temperature, which was checked repeatedly, and for which nothing could be found as an explanation in the physical examination, would force one by exclusion to think of a mild involvement of the temperature-regulating mechanism in the hypothalamus. The prominence of vasomotor disturbances is further suggestive. However, it must be pointed out that more conclusive confirmatory evidence for the idea of hypothalamic disease is not forthcoming. The laboratory data in general, did not furnish definite support for the presence of hypothalamic, or other organic disease. Thus the X-ray of the skull, the blood sugar and urea, and the glucose tolerance tests were normal. The electroencephalogram showed no abnormalities, except for artefacts produced by the patient's involuntary movements. There was no diabetes insipidus; a record of the intake and output showed only a rather diminished output of urine, accounted for by the extreme sweating. Aside from the involuntary movements described, there was no evidence in the neurological examination of any typical involvement of the extrapyramidal system. Neurological examination showed, as positive findings, only a slight dysdiadocho-

kinesis on the left, and an increased knee jerk on the left as compared with the right. The Rorschach examination, however, spoke more definitely for organic disease. In the opinion of Dr. Zygmunt A. Piotrowski, who interpreted the record, it seemed warranted to assume that there is "a mild organic (neurophysiological) disorder," which was "slight but definite." Various factors in the record, which will be discussed further, led to the conclusion that the condition might be a "mild convulsive disorder and that the ties were perhaps epileptic equivalents."

In summation, it is the writers' opinion that there is quite likely a substratum of organic disease. It is difficult, on the basis of the data available at the present time, to be more specific about its nature or localization. The writers feel that there is most likely a constitutional inferiority of the subcortical structures producing physiological dysfunction. The important fact, however, is that this factor in itself would be insufficient to bring on this syndrome, but that it renders the individual defenseless against overwhelming emotional and psychodynamic forces.

Thus, the symptoms of the disease in this patient, the motor ties as well as the vocal manifestations, can be considered, like all other symptoms which are psychiatrically determined, basically as a pathological attempt to solve a conflict situation. Careful observation of the various ties, particularly in the early stages of the development of a new form, revealed that the movements were purposeful, coordinated and could be interpreted as having a definite meaning. The same idea has been stated by many authors. Thus, Guinon, in his important paper "*Sur la Maladie des Tics Convulsifs*," differed with Gilles de la Tourette in the latter's designation of the ties as incoordinated, and pointed out that the movements are regular, systematic, and always follow a certain definite pattern. The movements, stated Guinon, are the same as in ordinary life, except that they are performed impetuously, without reason, too frequently, and without control by the will. Fleischner, in contrasting ties with choreic movements, pointed out that "in tic, the movements are coordinate and purposive; physiologic in the association and sequence of muscular contraction. They are grotesque only because malapropos."

During the course of development of every child, according to Freud, a normal conflict situation arises between his infantile instinctual drives and the demands of reality and society. The direct satisfaction of his powerful cravings being restricted, an important outlet is found in motor activity. Since this "acting out" is connected with strong feelings of pleasure, there is a strong disposition in the young child for gratification by vivid motor expression. The emotional conflict situation becomes most intense from about the age of five till seven, when the infantile love desires reach a climax. It is during this period that the conscience or super-ego develops by partial identification with the moral and cultural standards of the environment, mainly the elders. This psychological process begins in the normal child with a more or less marked imitative tendency, a strong drive to be and act like the individuals of the immediate environment.

The integration of the parental demands marks the onset of the latency period. At this time, the child's inner conscience begins to render objectionable within his own personality instinctual impulses hitherto contested mostly from without. The infantile libidinous and aggressive wishes become partly renounced and partly repressed and sublimated.

It is at the same age that, as described already, from the organic and neurophysiological standpoint, the subcortical motor urges relinquish their dominant effect and become more and more subservient to the higher controlling centers. This somatic maturation process is utilized by the psychic apparatus for the solution of the infantile emotional conflict situation. The result is that coarse motor expressions are replaced by subtle and socially more acceptable activities. Infantile erotic and aggressive motor impulses are to a great extent repressed and sublimated in favor of more highly differentiated language and intellectual functions, more subtle mimicry, inflection of voice and gesture, i. e., socially acceptable expressions and interpersonal communications under the control of the cortex.

This immense psychophysiological task which must be achieved by the growing organism in a comparatively short time, beginning at the onset of the latency period, makes it easy to see why this period is a particularly vulnerable one in psychomotor adjustment,

and can be considered to be a temporal *locus minoris resistentiae* for motor disturbances. It is precisely at this time, when somatic integration of motility as well as psychological repression must achieve the psychosomatic transition described, that an individual with an inadequate psychomotor system is particularly apt to fail. Failure to control or integrate the powerful motor urges by the higher centers results in a motor syndrome.

In the case of the present patient, as in other tic patients, the syndrome first appeared at about the onset of the latency period, though the conflict far antedated the appearance of the first tic.

The essential and basic conflict situation in the case of the writers' patient, from which the development of his symptoms can be traced, arose between the intense aggressive love claims directed toward the mother, but particularly toward the big brother, on the one hand, and the prohibitions against these drives, on the other. In his early childhood, there had been frustration of the child's instinctual impulses and drives by the reactive overprotection of his mother, which had interfered with (thwarted) his motor outlets more than is usually the case. Through this restriction, he was compelled to concentrate his love as well as his aggression within the family toward the one who became the centrum of his loving admiration as well as his hostile competition—the big brother. These impulses toward Gilbert were fostered and at the same time frustrated by the fact that he shared the bed with him from the age of two till eight. The illness began by the patient, hitherto an excellent sleeper, becoming restless and throwing himself around in bed, causing the two brothers to quarrel. The restlessness in bed showed as a struggle against the tempting closeness of the big brother which stimulated the forbidden instinctual impulses. He wanted to be paid attention and to be loved by the brother as Johnnie, the friend of the latter, was. At the same time, tendencies to imitation and identification in Freddie's case became much more marked than in normal children of his age; these tendencies were connected with Gilbert's relationship to his schoolmate Johnnie, whose relationship to the brother he keenly envied, and whose place he wished to occupy. Accordingly, the first tic, a winking of the eye, began when the patient had the conscious urge to imitate a boy in the movies, who had displayed the same winking as the

friend of his brother. The patient states, "I did it first because I saw a boy do it in the movie pictures and because Johnnie did it. Later I couldn't help doing it any more."

The writers know from identical data given by the patient and his mother that Freddie's exaggerated imitation tendencies met with violent disapproval on part of mother and brother. "They yelled at me and wanted me to stop acting like Johnnie." "I stopped doing with the eye after a while," said Freddie anxiously, "I must be able to stop the noises and the other movements as well!"

The discussion revealed that the winking first started as conscious appeal for attention by the big brother and then became an undesirable symptom of a self-punishing character.

The writers have the impression that the outbreak of the symptom was determined by an additional factor. Seemingly, as long as the clash of forces existed between the patient's impulses and the outer world, he could permit himself to act out and obtain release by acting out against the environment. But as soon as the conflict became more internalized, and the opposition to the impulse came from the inner controlling system, the censoring conscience allowed gratification only in a distorted and unrecognized way through the motor syndrome of tic formation. Instead of voluntary free motor expression of his underlying aggression and erotic impulses a syndrome of involuntary movements developed with which the child attempted in vain to struggle. The original voluntary mannerism was transformed into automatic tics, which thus represented a compromise solution between the impulse and his defense against it. With the successful suppression of the eye tics, subsequent and more complicated movements were developed, each successive movement representing both an additional gratification and an additional attempt to ward off and dissemble the previous tics, in the sense of the "para-tics" described by Meige and Feindel.

The other manifestations of the disease are explicable by similar mechanisms, thus rendering a unity and coherence to the symptomatology not hitherto described. Thus the echophenomena are another means by which the patient secures a partial gratification of his instinctual love impulses. This is accomplished in an in-



direct way by an exaggerated and prolific use of his identification tendencies, identifying with the desired and respected objects (as the movie heroes). At the same time, an aggressive and defensive component can often be seen. The inarticulate involuntary sounds, the grunts, groans, barks, howls and animal-like noises which are emitted, are either aggressive and defiant or plaintive and defensive in character, and, as has been shown, bear a remarkable similarity to the voluntarily-produced warlike sounds of the patient's aggressive fighting games.

It is probable that these aggressive inarticulated noises are forerunners in the development of coprolalia. The latter symptom is difficult to comprehend or explain unless one takes into account the content and meaning of the coprolalic utterances. While full-blown coprolalia is a rare symptom, the existence of "mental coprolalia," as pointed out by Meige and Feindel, is far less uncommon. In the present patient, a very interesting state is present at this time, which in all likelihood is but a transient phase in the process of development of coprolalia, and which gives the opportunity of studying this symptom *in statu nascendi*. The patient at the present time, as described in the case history, shows an abnormally painful and anxious reaction to the thought or sound of a "dirty word." It is obvious that he is reacting in defense against involuntary mental coprolalia, which he has so far successfully repressed. "I used to think dirty things, especially against my brother," he states, "but I never would say them. I hate to even hear them. Now I don't think them any more." From this it can be seen that coprolalia is but an advanced and less disguised expression of repressed and deeply hostile impulses (and is mostly anal erotic in its significance).

The patient's conscious desire to ward off outward expression of his inner impulses is extreme. Thus, in discussing his ties, he states, "I can always feel where I am going to have to move. I get a funny feeling in that part first. It gets worse and worse and I try with all my might to fight against it, but I can't, and finally it moves and I can't stop it." The same inner struggle is carried on within the personality of the child in respect to all his impulses, so that often the outer appearance is deceptive and belies the inner turmoil. The inhibitions and control, however, are inadequate.

The symptoms break through and thus involuntary expression is given to the impulses which cannot be successfully retained. The Rorschach interpretation, which will be quoted, is an interesting commentary on this point. The patient, in spite of himself, and with obvious but unsuccessful attempts at self-control, poured forth a voluminous amount of aggressive responses.

With the development of the intrapsychic struggle, another tendency was established, namely that of increased self-observation. This increased narcissistic attention to his own body was a secondary effect, and was responsible for the hypochondriacal traits which the patient displayed and which have been described. It also accounts in part for the rapid defensive actions on the part of the patient at the slightest increase in tension due to perception of somatic stimuli.

The tic movement is a disguised gratification of an impulse which cannot be controlled. The very same disposition to tic formation serves in these patients to ward off the gratification. The resulting movements, thus representing both the gratification and the defense against it, set up a vicious circle. More and more groups of expressional muscles become involved, more and more gestures are used, and soon there are added to these automatisms primitive vocal expressions, as well as vasomotor symptoms and hypochondriacal self-observation.

During the first year of observation, each tic corresponded with and could be traced to a specific emotional situation and represented a specific affective expression. The violent denying gesture of his head and neck, the defiant sticking out of the tongue, the pushing movement of the arm, as if shoving away an imaginary threatening person or thing, are only some of the examples. The tics were interchangeable in that, for example, when he was forced by his new teacher to suppress those tics which disturbed the class most, namely "the noises," another channel for expression had to be used, and the patient, to his own dismay, forcefully stuck out his tongue.

The changes, which have taken place in the patient's disease during the course of the writers' observation have been described. Whereas originally, at the age of nine, the tics were diffuse and widespread, increasing promptly with excitement to paroxysms of

generalized movements, accompanied by vocal utterances, echo phenomena and vivid mimicry, at the present time, at the age of 11, the ties are more isolated phenomena, fewer in number, more automatic in character, and more fully demarcated from the total personality. The vocal sounds are minimal, and the echo phenomena have disappeared. Mimicry has diminished markedly, the facial expression having actually become flattened out and at times even somewhat masklike from restraint. The patient is apparently in the stage before the appearance of coprolalia, in which he is defending himself against the existence of "mental coprolalia."

From the study of the development of the disease in this case, it seems to the writers that the illness can be divided into several successive stages. The first stage, during which the patient was not under clinical observation, could be designated as the stage of the imitative mannerism. This soon disappeared and was superseded by the second stage, which was characterized by generalized paroxysms of motor and vocal ties, as well as echolalia, echopraxia and vivid mimicry. The third stage, in which the patient finds himself at present, is characterized mainly by defense against the tie impulse. The ties are fewer in number, more isolated and automatic; the echo phenomena have disappeared and the facial expression has lost its vividness and grows tense. There is an intense defense against the presence of mental coprolalia.

Although the patient's symptomatology has improved during the course of psychotherapy which he has received, the writers do not wish to convey the impression that they believe that the course of the disease has been checked, or that any permanent or basic changes have taken place. On the contrary, they are inclined to agree with the general opinion expressed by previous authors on the subject that the disease has a relentless course and that the prognosis is unfavorable. The therapy previously given and recommended by the older writers consisted of prolonged sleep, isolation, educational exercises to bring the ties under conscious control, various pharmacological agents (iron, atropine, conium, Fowler's solution), hydrotherapy and static electricity. All have been of no avail. The prolonged course of psychotherapy received by the present patient has resulted in a temporary amelioration of symptoms, but in all probability the basic reaction patterns remain

the same, and the prognosis continues poor. This is due, the writers believe, to a substratum of organic disease or deficiency, the dominance of and lack of control over the subcortical system of expressional motility, and the inability to retain inner stimuli without discharge.

The Rorschach test, which was performed and interpreted by Dr. Piotrowski, independently and without any clinical knowledge of the patient, bore a remarkably close resemblance to the clinical conclusions, and confirmed to a great extent the observations and interpretations here given. He reported:

"The boy is of superior general intelligence but his intellectual efficiency, especially his conscious control over the thought processes, is inferior. The boy seems to be capable of a great variety of psychological experiences. There is an intensive fantasy life; some tendency to, and even habit of some self-analysis. While there is an intense psychological life, the outward activities of the boy do not seem to be commensurate with his inner experiences because of marked inhibition. The boy is cautious in his dealings with others. If he shows a genuine feeling from time to time, an impulsive emotion now and then, he does this in part because of his poor conscious control over his thoughts and at times also over his actions. He would like to keep himself under strict control but cannot always succeed in this desire. The prolonged voluntary attention is too poor.

"A good example of this insufficient self-control was the boy's very aggressive and peculiar human movement and other human interpretations. From the child's outward behavior, his uneasy shifting in his chair, his rather suspicious and somewhat unfriendly watchings of the examiner, it was apparent that the boy was uncomfortable when he was giving the aggressive responses, that he did not want to give them and yet he was not able to control himself, was incapable of withholding the interpretations. The remarkable speed at which he produced his ideas also pointed to a weakened control over an intense but repetitive process of free associating.

"There is a neurotic element in this boy's personality but—according to our present knowledge of the Rorschach method—it does not seem to explain all the personality disturbances. The emotional-social tensions apparent in this boy's record do not appear

sufficient to cause as much intellectual difficulty as is evident in the boy's Rorschach performance. The assumption that the boy's personality has been somewhat affected by a mild organic (neurophysiological) disorder seems warranted. The organic condition (if present) would be slight but definite. The very aggressive content of many interpretations, the marked repetitiveness of the answers, the peculiar type of obsessive thoroughness which made the boy give so very many but inaccurate reactions to each of the plates, the rapid and rather uncontrolled speed of productivity, the strong confabulation in the Rorschach sense the need of accounting for nearly all details and of including them in one complicated answer but of very poor quality, and the substantial color answers (fire, flames, meat)—suggest the boy's condition might be classified as a mild convulsive disorder. Perhaps his ties are epileptic equivalents. (?)”

#### SUMMARY

1. A case is presented of *maladie des tics*, or Gilles de la Tourette's disease, in an 11-year-old boy, ill since the age of seven, who has been observed and studied and has received intensive psychotherapy continuously for the past 30 months. The patient afforded an unusual opportunity to study the genesis of the various symptoms *in statu nascendi*.

2. The cardinal features of this disease, i. e., involuntary tics, uncontrollable inarticulate sounds, echolalia, echokinesia and coprolalia, are all seen to be different expressions of dysfunction of the system of expressional motility, gesticulatory, vocal and mimetic.

3. These expressional functions, probably mediated through the striopallidal connections, are normally dominant during the first five years of life, but then gradually come under the influence of higher controlling cortical centers. Patients with *maladie des tics* do not attain psychosomatic maturity in the course of this development. Instead, they are peculiarly unable to retain psychic or emotional stimuli in any state of inner tension or tonus. They show a veritable “incontinence of the emotions” and are forced to discharge their impulses in immediate expressional acts.

4. Evidence is presented in support of the idea that there is an underlying substratum of organic disease of the central nervous system in the etiology of the disease in this case. This is most probably in the nature of a constitutional or neurophysiological inferiority, which renders the individual more susceptible to emotional and psychodynamic forces. The latter play a predominant rôle in determining the form and nature of the symptomatology of this disease. It is necessary, in order to arrive at an understanding of this syndrome, to approach it from a psychosomatic standpoint, and to consider both the somatic and psychogenic factors involved.

5. An analysis of the psychodynamics involved shows that the tics are expression of an emotional conflict, representing, on the one hand, partial gratification of repressed instinctual impulses, and on the other, defenses against these impulses. The basic conflict in this patient arose between intense instinctual drives directed toward his mother but mainly toward his older brother, and the prohibitions first by the outside world, later by his conscience.

6. Some authors who worked on the question of tic have expressed the suspicion that the sound tics are forerunners of coprolalia in tiqueurs. The present writers were able to observe *in statu nascendi* in the clinical course of the illness with their patient the genesis of these sound tics. The involuntary vocal sounds and animal-like noises were partly aggressive and partly erotic in character and represented in all probability the first prodromal stage in the development of coprolalia. The next preliminary stage, namely that of "mental coprolalia," followed. The patient shows at present mental coprolalia, that is to say a state in which mental presentations of obscene ideas are warded off with intense defense reaction formation against them.

7. Several successive stages in the course of the development of the disease in the writers' patient have been described.

8. Although psychotherapy has resulted in an improvement thus far in this case, the writers feel that this is only temporary, that no basic or fundamental changes have taken place, and they agree with previous authors that the prognosis is unfavorable in this disease.



### CONCLUSIONS

A psychosomatic study of *maladie des tics*, or Gilles de la Tourette's disease is presented, with a detailed analysis of the organic and psychodynamic factors operative in a case which has been under psychotherapeutic observation continuously for a period of 30 months.

Children's Service

New York State Psychiatric Institute and Hospital

New York, N. Y.

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## ARTIFICIALLY INDUCED FEVER AS A THERAPEUTIC PROCEDURE

BY WILLIAM R. CARSON, M. D.

It is proposed to report the results obtained by the use of artificial fever therapy as employed in a State hospital over a period of 11 years. The majority of cases treated were, of course, cases of neurosyphilis, but the use of this therapy has not been confined entirely to this condition. No attempt is made to summarize the history of artificial fever therapy, its physiology or various methods of induction. This has been done adequately by Neymann<sup>1</sup> in his textbook.

### TECHNIC

In general, patients have been treated once a week, each treatment consisting of five hours of fever—three hours above 103.6°F and two hours at or over 106°F. The average number of treatments for each patient has been 15 and the total number of hours approximately 70. There have been variations in this basic method both as to the length of individual treatment and the number of hours given the individual patient in his entire course. Some patients have received treatments of eight hours; two as long as 30 hours, while many have received a total number of hours of fever in excess of 70.

The method employed at St. Lawrence State Hospital from January 1, 1932, to April, 1934, to induce fever was the so-called general diathermy, as described by Neymann and Osborne<sup>2</sup> and also by Worthing.<sup>3</sup> Following this, a sleeping bag was used rather than an insulated bed. Since 1935, fever has been induced by means of the inductotherm. At first, the inductotherm was used in conjunction with a sleeping bag as described essentially by Schmitt.<sup>4</sup> For the past six years, the sleeping bag has been used in isolated cases only, and cabinets with humidified air have been used following the method described by Neymann<sup>1</sup> in his textbook, and also by Upton Giles.<sup>5</sup>

The patient, the night before treatment, receives an enema. Whether breakfast is served depends upon the patient and his reaction to treatment. He is placed in the fever cabinet at about 8 a. m., wrapped in a terry cloth blanket. The inductotherm is turned

on and remains on until the patient's temperature reaches about 1° below the desired peak. From then on, temperature is regulated by means of the thermostatic control of the fever cabinet. An indicating thermometer is used only after the inductotherm is turned off. Fluids are given freely, the drinking water containing salt. Some patients tolerate treatment very well, and no medication is needed, but most patients require sedation. No drug is routinely used, but an attempt is made to employ that medication best suited to the individual patient. Some do better with morphine; others with barbiturates. Patients having a history of convulsive seizures or who have suffered convulsions during previous treatments receive luminal. Temperature is recorded every 15 minutes until it reaches 104°F.; then every five minutes until the indicating thermometer is inserted. At the completion of treatment, the patient has a tepid sponge bath, followed by a shower as soon as his temperature is within normal limits.

Too much emphasis cannot be placed on the necessity of trained personnel. Nurses who are able to recognize the prodromal symptoms of danger are able to avert that danger. Psychiatric training is invaluable. Many patients become delirious; almost all become querulous and need diversion, persuasion or stimulation. A small electric fan is used in conjunction with each fever cabinet. It is directed toward the face of the patient and tends to make him more comfortable.

#### SUMMARY OF TREATMENT

Fever therapy at St. Lawrence covers the period from 1931 to 1943. Previous to 1936, malaria was also used at the hospital, but since that time, artificial fever therapy has been the only method of fever treatment.

Any patient who received less than three fever treatments or less than 15 hours of temperature above 103.6°F. has been excluded from this report.

In the neurosyphilitic group, there were 122 patients with general paresis treated; 17 with cerebral syphilis; five with tabes dorsalis and three with juvenile general paresis. All these patients had positive spinal Wassermanns; about 5 per cent had negative blood Wassermanns. Considering the general paretics and cere-

bral syphilitics as one group, this would include 139 patients. Of these, 49 were women, and 90 were men. The oldest patient treated was 68; the average age of patients treated was 43.

Of the 122 general paretics treated, 71 left the hospital; 33 still are in the hospital; 18 are dead. Of the 71 that left the hospital, 30 were discharged as recovered, 27 as much improved, 11 as improved and three as unimproved. Of those remaining in the hospital, five are much improved, nine improved and 19 unimproved as far as mental symptoms are concerned. Thus, 67 per cent of all patients treated showed some improvement; 18 per cent are unimproved but still living, and 15 per cent are dead.

Concerning the matter of remissions, questionnaires have been mailed to the relatives of all patients who have left the hospital in an attempt to determine their present condition. Of those contacted, about 60 per cent replied.

Patients suffering from general paresis are considered to be in remission when they can return to the community, engage in their usual occupations and maintain their places in society. Using these specifications as a criterion, the remission rate in the cases of general paresis treated is  $46\frac{1}{2}$  per cent.

Seventeen cases of cerebral syphilis have been treated. Of these, 10 patients have left the hospital; eight were discharged as recovered; one as much improved and one as improved. Five cases are in the hospital, two classified as much improved; one as improved; two as unimproved. Two patients are dead. This means that there has been some improvement in 76 per cent of the cases treated; 12 per cent are unimproved but living; 12 per cent are dead. In the cases of cerebral syphilis treated, there is a remission rate of 53 per cent.

Figuring general paretics and cerebral syphilitics as one group, it contains a total of 139 patients treated. Of these, there is a remission rate of 49 per cent and a death rate of about  $14\frac{1}{2}$  per cent. Consideration of the group remaining in the hospital shows that seven fall in the much improved classification. Of these, two patients are in family care and getting along well; two patients have shown considerable improvement and probably will leave the hospital at some future date; the remaining three have physical disabilities which have prevented their discharge from the hospital.

Consideration of the 20 deaths reveals that one died 10 years after completion of treatment, with death caused by septicemia due to gas bacillus; one died 10 years after completion of treatment, with death due to pulmonary tuberculosis; one died two and one-half years after completion of treatment, with death due to pulmonary tuberculosis; one died four years after treatment, because of surgical shock during an operation for carcinoma of the cervix; one died eight months after treatment because of carcinoma of the bronchus. The remaining 15 deaths were due to neurosyphilis.

All patients in the group received tryparsamide therapy with the exception of 37. Of the 37 who did not receive tryparsamide, 27 are out of the hospital; five are in the hospital, and five are dead. Nineteen of the 66 patients considered to be in remission did not receive tryparsamide. Two of the patients who were not improved did not receive tryparsamide, and eight of the patients who were improved did not receive it.

Considering the group that left the hospital as a whole, its members each had an average of 80 hours of temperature above 103.6°F. Of the 80 hours, there is an average of 26 hours at or above 106°F. Those remaining in the hospital underwent an average of 72 hours of temperature over 103.6°F, with an average of 28 hours of temperature at or over 106°F. The patients who died had an average of 54 hours of temperature over 103.6°F., with an average of 19 and one-half hours of temperature at or over 106°F.

Five patients with tabes dorsalis were treated. These patients were suffering from gastric crises, and one of them was unable to walk by himself before treatment. The five received chemotherapy as well as fever therapy, usually in the form of mapharsan and bismuth, although two were treated with tryparsamide. Three of the patients also received thiamin chloride. The five patients treated are all out of the hospital, four discharged as much improved, one as improved. Gastric crises were relieved in every case, and the patient who had been unable to walk without assistance was able to get about by himself at the end of treatment. In this group there were no deaths.

There were three cases of juvenile paresis treated. One of the patients left the hospital, her condition improved; two remained in the hospital; one showed improvement, and the other remains un-

improved. The three patients received chemotherapy in the form of tryparsamide.

Of the general paretics treated, six suffered from pulmonary tuberculosis at the time of treatment. None of these patients received chemotherapy. Three of these patients have left the hospital and are in remission; two remain at the hospital; one is much improved; one unimproved. One patient is dead.

Of the patients now in the hospital, three had previously left, showing some improvement, but suffered a relapse requiring re-hospitalization.

There were 12 patients with acute gonorrhea treated; recovery was obtained in 10 of these. In the early years, approximately three treatments were given for this condition, but during the past few years, the hospital has been giving one treatment of eight hours with a temperature maintained at 106.8°F., and the patients receiving this treatment have shown negative smears following it. Most of the cases treated in the past few years were those that had proved sulfanilamide-resistant. One of these patients, a catatonic dementia praecox case, died of lobar pneumonia 22 days after his last treatment.

Six patients with arthritis have been treated. In these cases, the temperature has been maintained at 103.6°F. for a period of about five hours, and patients have received from five to 10 treatments. In two cases of infectious arthritis, the results were good, and the patients showed definite improvement. The other four cases were hypertrophic arthritis and showed no response to therapy. The present tendency in the treatment of arthritis is to combine it with autohemotherapy but, as yet, this has not been done at St. Lawrence.

There was one case of Sydenham's chorea treated, a child 14 years old. She had three treatments over a period of 12 days and showed complete recovery from her disease.

#### CONTRAINDICATIONS AND COMPLICATIONS

Neymann,<sup>1</sup> in his textbook, emphasizes that there are no absolute contraindications to fever therapy. He states that whereas organic heart disease was once considered an absolute bar, we now know that it does not necessarily preclude the use of hyperpyrexia. He feels that patients with a history of convulsive seizures, decom-



compensated heart or acute myocarditis should not be treated. Coulter<sup>11</sup> states that the contraindications are age over 60, aortic aneurysm, pulmonary tuberculosis, advanced arteriosclerosis and late neglected neurosyphilis that has progressed to complete dementia. Other writers have suggested that the physical criteria for fever therapy should be the same as for surgical operation. It is undoubtedly true that, if cases are carefully selected from the standpoint of their physical condition, complications can be lessened and death averted. On the other hand, general paresis is a serious disease which usually is fatal, and it would seem that any contraindication would be only relative in comparison with the severity of the disease itself.

In spite of the fact that pulmonary tuberculosis is considered a contraindication, six of the patients with general paresis had pulmonary tuberculosis and were treated with no complication in so far as their tuberculosis was concerned. Three of these patients have left the hospital; one has shown considerable improvement although he remains in the hospital; and one still is unimproved, as far as his neurosyphilis is concerned, but his tuberculosis has improved. The one patient with pulmonary tuberculosis that died had a far-advanced case on admission. His X-ray was reviewed by men trained in the study of tuberculosis, and they gave a hopeless prognosis. He had treatment over a period of five weeks, during which time he gained weight, and there was no change in his chest condition. He remained in the tuberculosis pavilion at the hospital and died of pulmonary tuberculosis four months following his last treatment.

It is not the writer's aim to advance the theory that fever therapy is of any value in the treatment of pulmonary tuberculosis. It probably is not a wise procedure. However, when a patient has general paresis and also pulmonary tuberculosis, it is the writer's firm conviction that he can be treated with safety by means of induced fever. If the general paresis is helped, it would be expected that he could better cooperate in sanatorium care.

The question of arteriosclerosis, hypertension and cardiac disease is one of degree. Certainly a patient with a decompensated heart should not be treated. However, when the cardiac condition is well compensated, treatment is safe, provided it is properly su-

pervised. In the 139 patients treated, there have been 24 suffering from some form of cardiac disease; 12 suffered from some degree of arteriosclerosis; eight suffered from hypertension and two from chronic nephritis. It has not been the experience at St. Lawrence that there is any marked danger in treating patients who have a history of convulsions. It is true that convulsive seizures occurring during treatment are serious complications and frequently cause marked rises in temperature. However, the writer has treated eight patients with definite histories of convulsive seizures and has been able to complete treatment without difficulty. These patients received luminal prior to treatment, and the medication was repeated during the first three hours of treatment. The writer recently completed treatment on a patient who entered the hospital in status epilepticus caused by general paresis. Over a period of two days, he had approximately 150 convulsions. He has had 14 fever treatments with a total of 74 hours, with a temperature  $103.6^{\circ}\text{F}.$ , and 40 hours at  $106^{\circ}\text{F}.$  or over. He did not suffer a convulsion during treatment. His condition is markedly improved, and it is expected that he will leave the hospital soon.

The chief complication of treatment is, of course, death. In 139 patients treated, St. Lawrence State Hospital had two deaths that could be considered to be associated with the treatment; one was the death of a general paretic and the other of a cerebral syphilitic. The cerebral syphilitic, in his fifth treatment with a temperature of  $103^{\circ}$ , suffered a cerebral hemorrhage and a resulting hemiplegia and died six days later. The other patient had 12 treatments with a total of 72 hours of temperature; he had shown considerable improvement in his condition. After the last treatment, his temperature suddenly rose again, although it had been brought to normal, and all efforts to control it were useless; he died 18 hours after the completion of his treatment.

In the report of O'Leary's<sup>7</sup> committee, the crude death rate is determined by figuring that every patient dying within three months of treatment, regardless of cause, was a treatment death. Under this definition, the committee found a 13 per cent mortality with malaria and an 8 per cent mortality with artificial fever; the number of cases was 1,420—1,100 with malaria and 320 with artificial fever.

To figure the crude death rate at St. Lawrence, the writer considered every case treated, regardless of the number of treatments given. Many patients during the early years were transferred from fever to malaria after one or two treatments to keep the malaria strain going; and there was a total of 150 patients treated, with 10 deaths occurring within the three-month period, giving a crude death rate of about 6.6 per cent. That this estimate is only crude can be emphasized by the fact that of these 10 patients, one committed suicide and one died while receiving malaria.

Convulsions are an occasional complication of treatment but usually have no serious consequences. One patient in the group, during his eleventh treatment with a temperature of 105.8° F., went into status epilepticus. His temperature rose rapidly to over 107°, and it was necessary to give a general anesthetic to control the convulsions, following which his temperature was easily reduced by tepid sponging.

Heat stroke is a complication that occurs rarely with trained personnel. In 139 cases treated, the writer had two heat strokes, both of which responded to treatment of tepid sponging and intravenous saline.

Burns are a minor complication that rarely occur with inductothermy but frequently occur with diathermy.

#### DISCUSSION

Prior to the use of malaria, tryparsamide and artificial fever, general paresis was a fatal disease. Over 90 per cent of the patients admitted to hospitals died within a few years. Too little emphasis has been placed on the life-saving qualities of these methods of treatment. In classifying patients as in remission, improved or unimproved, one seldom takes notice of the fact that even though they are unimproved mentally they are living. In a group of 139 patients suffering from general paresis and cerebral syphilis from 1931 to 1943, there was a death rate of only 14½ per cent. This is about the same percentage of death that has been reported by many investigators. That this percentage is low is emphasized by a recent report of Dreyer<sup>8</sup> who states that of 42 patients who did not receive treatment, 95.3 per cent died or deteriorated in a two-year period. A majority of the patients who remained in the hospital

after treatment were able to be about and take part in the various activities, and were not physically incapacitated, as they had been before modern treatment was instituted.

In this report, the writer has not attempted to divide the types of cases treated. All patients treated were admitted to a State hospital and showed definite signs of a psychosis. In practically every case, the serology was strongly positive and the mastic curve fell into the respective paretic, luetic or tabetic zones. Most of the cases treated would fall into an intermediate or severe group as described by O'Leary.<sup>7</sup> In this regard, it is significant to note that in his report as to the comparative value of malaria and artificial fever, as gathered from a study of 1,420 cases, he emphasizes that the results obtained were quite similar, except in the severe group of general paretics where the favorable clinical response to artificial fever was 10 times as great as to malaria. As he expressed it, the remission rate for patients with severe paresis treated and observed for the same length of time was one out of 100 with malaria as compared with 10 out of 100 with artificial fever. This study of 1,420 cases would also seem to settle the argument as to whether artificial fever is as efficacious as malaria. Certainly, the compilation of results would prove that artificial fever equals malaria as a therapeutic measure.

A recent study by Ewalt and Ebaugh<sup>9</sup> further confirms this, as they conclude from a study of 232 cases that, "Patients with physical contraindications to therapeutic malaria may, in many instances, be safely treated with artificial fever therapy. Either method is reasonably efficient if properly managed and if general followup treatment and care are adequate."

Many reports have been made during the past 12 years on the use of artificial fever therapy, and the majority of them have been favorable, although Freeman,<sup>10</sup> in 1933, reported unsatisfactory results.

Granted that therapeutic fever is equal to malaria in the treatment of general paresis, then certainly it should be the treatment of choice. It obviates the necessity of introducing another disease into the body; is easy to control; treatment can be given on an individual basis and prolonged, if necessary; and many patients who could not stand malaria are able to take artificial fever without difficulty.

The writer has made no attempt to make a comparative study of the various methods of treatment in general paresis. Every patient who could receive it had tryparsamide. There were patients, however, who could not take the drug, and a percentage of these are in the remission group. Also, many of the patients who did receive tryparsamide showed improvement under fever.

The question as to when patients improve with fever treatment has varying answers. Sometimes the improvement is quite dramatic after a few treatments; at other times, improvement is gradual, and patients do not leave the hospital until a year or two after completion of their treatments. O'Leary<sup>7</sup> has indicated that the maximum amount of improvement is noted three years after treatment. The writer has noticed some very outstanding results in cerebral syphilitics with focal lesions, particularly those who were paralyzed. Two or three of these patients were able to walk after a few treatments.

The change in serology in cases treated was about the same as reported by other workers. The first change is seen in the cell count usually within a month or two after treatment. Six months after treatment, there is usually a change in the mastic curve, and then, as time goes on, the spinal Wassermann becomes less positive and frequently after two years becomes entirely negative. The writer has noted patients who have shown no clinical improvement and who have had a complete reversal of their spinal serology. The majority of patients showing improvement has also shown improvement in serology. If the blood Wassermann changes, it usually does not do so until two or three years after the completion of treatment.

There appears to be considerable variation in opinion as to what is considered to be the optimum number of hours a patient should receive fever for general paresis. Some authors, for instance Epstein,<sup>11</sup> suggest 50 hours; but from the statistics as reported by O'Leary,<sup>7</sup> it would seem that a minimum of 70 hours offers the maximum chance of improvement. The writer has attempted to give a minimum of 70 hours of elevated temperature, with at least 30 of the 70 hours at or over 106° F.; to some patients, a great deal more than 70 have been given. The writer has tried not to stop any treatment while a patient is improving. In an attempt to deter-

mine whether a longer course of treatment would be beneficial in patients who do not respond to the usual course, the writer has given 400 hours of fever to one patient; but he remains unimproved so far as his mental condition is concerned. He still is in the hospital and living, however, four years after the completion of his treatment.

As described in the discussion of technic, the writer has usually limited treatments to a period of five hours, although some patients have received treatments of eight hours. In two cases, there were treatments of 30 hours in one session. The first time, this treatment was given to a patient 37 years of age who had a chronic myocarditis and had had a cataclysmic onset of his mental symptoms about three months before admission to the hospital. He was receiving tryparsamide and had had two fever treatments. In spite of treatment, he was deteriorating rapidly both mentally and physically; he was incontinent of urine and feces, disturbed, disoriented, resistive, assaultive, hallucinated and grandiose. Because he was evidently going down hill with ordinary therapy, he received a 30-hour session of fever with 25 hours at or over 106°F. He stood the treatment very well. Following this, he showed a definite improvement. He was quiet, agreeable, partially oriented, no longer grandiose and no longer incontinent. This improvement lasted for 13 days, when he suddenly became active again, and all the earlier symptoms reappeared. He continued on the downward course and died about three months following this prolonged treatment. The second patient who had a 30-hour treatment had shown material improvement with three fever treatments and had asked if he could take the long treatments so that he might leave the hospital and return home at an earlier date. His physical condition was good; he took the treatment without difficulty. There were no untoward results, and he is now out of the hospital running his own farm.

There is one definite factor that stands out in the treatment of general paresis and that is—the earlier fever is given the better chance the patient has of obtaining a remission. All reports that have been published emphasize this fact. Perhaps this thought has been best expressed by Wagner-Jauregg<sup>12</sup> in a paper which states: "When however, clinical symptoms of general paresis are present, the most effective treatment should be started as soon as possible,



because the chance of complete cure diminishes rapidly with the duration of the disease."

Reports have been made by Rosanoff<sup>13</sup> and again by Bennett,<sup>14</sup> suggesting the use of fever therapy as a measure of prophylaxis against the development of general paresis in the syphilitic. The writer has had no experience in doing such work, as he has not had the opportunity; but it would seem that the idea has merit, and it is to be hoped that further work will be done in this regard and perhaps a regime of prophylaxis worked out.

### CONCLUSIONS

1. Of 122 cases of general paresis treated by the methods described, there was some improvement noted in 67 per cent. There is an estimated remission rate of 46.5 per cent. Of the patients treated, 15 per cent are dead.

2. Of 17 cases of cerebral syphilis treated, there was some improvement noted in 76 per cent. There is an estimated remission rate of 53 per cent; 12 per cent of the patients treated have died.

3. When sulfa drugs fail, artificial fever offers a method of control in acute cases of gonorrhea.

4. Patients suffering from pulmonary tuberculosis and general paresis have been treated by fever without any apparent harm to their chest conditions.

5. Considering any death occurring during treatment, or three months after the completion of treatment, as a treatment death, regardless of what the cause of death might be, there was a crude treatment death rate of 6.6 per cent.

6. There were two deaths definitely associated with treatment, giving a mortality rate of 1.6 per cent.

7. It is concluded that the optimum hours of fever in the treatment of general paresis are 70 with two-fifths of this period at a temperature of 106°F., or over.

8. Artificial fever is a comparatively safe procedure but requires the supervision of trained personnel.

9. In those cases of general paresis having a history of convulsive seizures, phenobarbital has been used before and during artificial fever treatment. In all such cases, treatment has been successfully concluded without complication.

St. Lawrence State Hospital  
Ogdensburg, N. Y.

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## THE CONSERVATIVE APPROACH TO THE USE OF SHOCK THERAPY IN MENTAL ILLNESS

*Including a Study of Electroencephalographic Tracings Before,  
During and After Shock Therapy*

BY SAMUEL R. ROSEN, M. D.,\* LAZARUS SECUNDA, M. D.,\* AND  
KNOX H. FINLEY, M. D.

This paper proposes the adoption of a middle-of-the-road method in the use of shock therapy in the treatment of mental illness. This suggestion is based upon the following considerations. First, no one can deny the possibility that the indiscriminate use of insulin, metrazol or electric shock can, and occasionally does produce intracerebral pathology in laboratory animals<sup>1</sup> and human beings.<sup>2</sup> Second, the consensus of informed psychiatric opinion is that shock therapy, metrazol and electric shock especially, gives very good results in the depressive states,<sup>3, 4, 5</sup> and that in schizophrenia—through insulin and metrazol—the problems of institutional care are made easier by improvement in habit levels. Furthermore, more recent statistical studies reveal schizophrenic remission rates with shock therapy that are as good, if not better than the results with long-term painstaking psychotherapy.<sup>6</sup> Third, many therapists shrink from employing treatment which carries such dangers with it as prolonged insulin coma,<sup>7</sup> metrazol fractures<sup>8</sup> and the uncertainty of future nervous tissue pathology that may follow electric shock.

What course then remains to the conservative therapist who agrees that shock therapy is of value, but hesitates to expose his patients to such drastic treatment? Although it is true that the mortality is low (well under 1 per cent)<sup>9</sup> what of the morbidity, both immediate and remote? The writers feel that the observance of the points which follow will provide a good working compromise.

1. *Proper Selection of Cases.* Shock treatment should not be given in those cases in which a careful study of the psychodynamic factors involved would suggest the possibility of cure by psycho-

\*Since this paper was written, Dr. Rosen and Dr. Lazarus have been called to active military service as lieutenant and captain respectively, in the United States Army Medical Corps.

therapy alone within one to two months. Two cases will be discussed illustrating this point. Conversely, treatment does little good in cases where the psychosis is an episode in a personality suffering from a life-long maladjustment. A typical case will be demonstrated.

2. *The Use of a Safe Therapeutic Agent.* With the development of the curare and beta-erythroidin-hydrochloride techniques for the modification of the metrazol convulsion, there is no excuse for the occurrence of fractures or any major complication, provided the therapist has had adequate training and experience in this type of work. In spite of the results claimed for insulin hypoglycemic shock, this method is not preferred because it is too cumbersome in the amount of time and nursing care required, aside from the greater risk involved. Electric shock yields the same results obtained with metrazol, yet, notwithstanding its time-saving simplicity of administration, its long-term action on nervous tissues is not yet known with any degree of certainty.

3. *Limitation and Spacing of Treatments.* In the previous experience of one of the writers (S. R. R.), it has been observed that, when improvement was noted in metrazol-treated cases, such changes usually developed after three to five treatments had been given. It is, therefore, advisable to wait several days after the first major changes occur, since the patient may go on to greater improvement, whereas, if treatments are routinely continued, five or 10 more may be given quite needlessly and then regarded as the minimal total dosage required. Accordingly, it is suggested that altogether too many treatments have been given in the past; that this can be avoided by watching the patient carefully after the first few shocks and then permitting improvement, if any, to "ripen;" that, finally, if no change is noted after six or seven treatments with sufficient intervening time allowed for adequate "ripening," it means that additional treatments will probably be of no avail except, perhaps, to invite further criticism from the "brain damage" investigators.

4. *The Role of Psychotherapy.* The use of shock therapy should be regarded as a means of "bringing the patient to his senses," i. e., it makes him accessible to psychotherapy. This requires a continual search by the therapist for the psychodynamics of the

illness so that the now cooperative and alert patient can be better assisted in his groping for complete insight and eventual recovery. The utilization of varying degrees of psychotherapy depending upon the individual circumstances is apparent in the case material.

5. *A Healthy Skepticism and Hesitation to Be Satisfied with the Method Offered Herein.* This involves interest in further investigation into the problem. One such aspect is the study of the correlation between the electroencephalographic measurement of changes in brain physiology and clinical changes observed during and after metrazol convulsions.

The more or less conservative approach to the use of shock therapy as outlined in the foregoing is demonstrated in the work done at the Boston Psychopathic Hospital during the seven-month period from November, 1940, to May, 1941.

#### MATERIAL

Fourteen cases were studied, of which two did not receive shock therapy. Three were schizophrenias; seven were agitated-depressions at the involutional period (or so-called involutional psychosis, melancholia); two were undiagnosed psychoses, schizo-affective, with depressive features predominating; two were manic-depressive depressions of fairly long duration. Abstracts follow:

##### *Case 1*

W. B., a 39-year-old single unemployed interpreter, was admitted on October 28, 1940. He had been working in Cuba 15 years previously, but lost his hearing following an attack of malaria. He left his job and returned to his parents in Boston where for 10 years prior to admission he gradually became more seclusive, refused to leave the house and mixed only with members of the family. However, he kept himself neat, attended meals, continued to be well-posted on news and current literature and did odds and ends of work about the house. Three weeks prior to his hospital entry, he suddenly refused to eat with the family, cooked his own food, stayed in his room most of the time, became noisy and threatening. The family history was negative. Physically, the patient was of pyknic habitus and exhibited nearly complete bilateral nerve deafness.

In the hospital, he was very seclusive, felt he was "Saint William" and had auditory hallucinations in which a girl's voice commanded him to do or not do various things. The patient showed no change until after three treatments with beta-erythroidin-hydrochloride and metrazol had been given, although a slight transitory improvement followed the second shock. After four days had passed without maintenance of the improvement, the third shock was given subsequent to which the patient became quite sociable, no longer expressed delusions or admitted having hallucinations. However, at the time of W. B.'s discharge on a visit, December 10, 1940, he was somewhat evasive on the question of the auditory hallucinations.

At the last following interview on August 25, 1941, the patient appeared to be much thinner and was completely deaf. He was getting along all right with his brother and his family, but seemed to be definitely withdrawn and after considerable hesitation rather cheerfully reiterated his former delusions. Hallucinations were denied. The patient refused to have an electroencephalogram taken. Although his family expressed their satisfaction with the result that had been obtained, the patient's present status must be regarded as improved only so far as the subsidence of the previous acute episode is concerned. The diagnosis was schizophrenia, paranoid.

### *Case 2*

A. O., a 19-year-old single, theater "usherette," was admitted, October 2, 1940. She had always been a quiet seclusive person, and for two years had been "peculiar" in that, in 1938, she refused her high school diploma and since then had become unduly irritable, snapping at relatives, keeping a good deal to herself, and while still holding a part-time ushering job conceiving a fantastic attachment to the theater manager. A week's vacation at the summer home of a schizophrenic aunt made matters worse. She became more and more confused, felt that people were calling her a prostitute, became very restless, couldn't sleep for fear of people harming her. The family history reveals a domineering grandmother and a very weak father in addition to the aunt.



A. O. worked until two days before her admission, when she became markedly excited over her guilty sexual feelings toward the manager. Physically, the patient is a well-developed, attractive girl of athletic habitus. In the hospital, she was confused, hallucinated, deluded, gradually becoming much worse, with incontinence, general untidiness and refusal to take food. Treatment began on January 1, improvement followed, although insight was slow in developing. By January 21, four treatments had been given. The patient became quite sociable in the ward and was discharged on visit, February 20. She has been followed closely and at present is working and appears to be quite happy. Her diagnosis was schizophrenia, paranoid, her present status, a good social remission.

### *Case 3*

H. R., a 26-year-old single stenographer, was admitted to the hospital on February 27, 1941. After the sudden death of her father four years before, she had become withdrawn and was unduly religious for a year. Then, following the development of spells of shouting, screaming and hallucinations, she was sent to a private hospital. She remained there three years and gradually became more withdrawn, refused food, rarely spoke. The family took her home against advice, but after three weeks was forced to commit her. Physically, H. R. was of asthenic habitus, with marked hirsutism.

In the hospital, she showed predominantly catatonic trends, posturing, grimacing, being negativistic at times, showing cerea flexibilitas. Treatment with beta-erythroidin-hydrochloride and metrazol was begun on May 1. Although the patient showed temporary slight improvement in the direction of being easier to care for, no change in the psychosis was seen after six treatments. H. R. was transferred to another hospital, June 11, 1941. On September 2, 1941, she had not shown any definite change, although relatives reported she had spoken more freely and went out riding with them. The diagnosis was schizophrenia, catatonic; and the present status, essentially unimproved.

*Case 4*

R. H., a 52-year-old accountant, was admitted, October 29, 1940. He had formerly been a pleasant, cheerful person, but after suffering considerable financial losses gradually became depressed. Eleven months before admission, he began to feel he was good for nothing any more, and told his wife that she had better find another husband. He worked until August, 1940, when he lost some more money, and since then had been very depressed, refused to leave the house or see anybody, had lost interest in his garden, had been eating and sleeping poorly and threatened suicide. The family history revealed a mother who was "a melancholy person." Physically, the patient was of asthenic habitus and under weight.

In the hospital, R. H. was markedly depressed and agitated, felt he was going to be crucified, ate and slept poorly. Treatment was begun on November 5 with marked improvement noted after the third treatment. The patient, however, tended to slide back again, and two more treatments were given with improvement. Five days after the fifth treatment, it was felt that the patient still lacked complete insight, and a sixth treatment was given. Following this R. H. seemed to become himself again with good insight into his troubles. He was discharged on visit, December 4, 1940, was interviewed on several occasions thereafter, and on the last checkup August 20, 1941, was in good social remission, happy at home and in his work as an accountant, had gained weight, and enjoyed his gardening hobby. The diagnosis was involutional psychosis, melancholia; the present status, good social remission.

*Case 5*

H. J. is a 54-year-old pharmacist who was admitted, November 15, 1940. He had always been a chronic complainer about constipation, inclined to nag at his wife and son, had few friends and no outside interests, had always been very "stubborn." For several months before admission, he began to have trouble with his memory in filling prescriptions, began to lose confidence in himself, was always fearful of having erred in compounding a prescription. He began to feel his mind was gone, became very irritable, contemplated suicide. There was a family history of a father with epi-

leptic fits, the mother was said to have been "a tartar." Physically, the man was of asthenic habitus with signs of weight loss and emotional hypertension (182/86) which later subsided.

In the hospital, H. J. was very depressed, agitated, self-condemnatory. He refused to eat because he insisted his blood and bowels were gone. Treatment was begun November 25, 1941. (Blood pressure was 118/84.) Following the second treatment, the patient made a suicidal attempt. After the fourth, he began to improve, but stopped improving again after seven days. Three more treatments were given by December 15, following which H. J. became more cheerful and showed good insight into his somatic delusions and paranoid ideas, although he still complained of his constipation. He was discharged on visit three weeks later although he was still lacking in self-confidence. Work was obtained for him through a social agency and he received assurance through frequent interviews. At present, he has been working for six months, gets along fairly well at home, has gained weight, but is still constipated; he still lacks the self-confidence to try to get back into pharmacy but looks forward to the possibility of doing so in the future. His diagnosis was involutional psychosis, melancholia; his present status, better than "markedly improved" but not quite a good social remission.

#### *Case 6*

N. S., an alien metal worker of 50, was admitted on January 8, 1941. He had been quite well until March, 1940, when he injured his eye and feared he might lose it. Six months prior to his hospital entry, he became worried and depressed over the discussions attending the Alien Registration Act. He felt he had done some wrong, became agitated, was unable to work or eat, lost sleep and dropped 15 pounds in weight.

On admission, N. S. was tense, agitated, fearful, restless. He was undertalkative and depressed. He felt he was going to be punished by the government for not being a citizen. He frequently said: "They are going to cut my arms off, I am going to die." Physical findings were negative; he was of pyknic habitus. In the hospital, no change was seen after two weeks, and shock therapy was begun January 20. The man showed no improvement until six

treatments, of which only three resulted in seizures, had been given. Possibly the missed seizures tended to delay the response which came after the third shock was produced. N. S. improved rapidly from that point and was discharged on visit February 7, 1941. A followup in September revealed that he had continued to be well and was working satisfactorily. His diagnosis was involutional psychosis, melancholia; the present status, a good social remission.

### *Case 7*

P. M., a 47-year-old married linotype operator, was admitted on January 6, 1941. He had previously managed fairly well in that he had acquired a family, held a good job and was fairly sociable despite his feelings of self-consciousness and inferiority. He had always been concerned with his sexual potentia. His wife describes him as very meticulous, introverted and given to reading serious books. Nine months prior to entry, he felt something "snap in his head." He became depressed, felt as if all his nerves were paralyzed, left his job in October, 1940, felt death was imminent. Two months before admission, he attempted suicide.

In the hospital, P. M. was agitated, depressed, self-accusatory. He felt he was going to die, his "motor nerves were all destroyed and bones have crumbled away" and finally he stated that his brain and spine were held together by a sliver of glass which might break at any moment and kill him. Physically, the man was of asthenic habitus and had scars on both arms from previous suicidal attempts. No progress was noted for two weeks. Shock therapy was instituted on January 21 with immediate improvement in that the patient became quite cheerful. This lasted only two hours, however, and treatment was continued. After the second shock on January 23, P. M. again lost his agitation and depression for four hours following which a relapse reoccurred. This sequence of events followed the third treatment on the twenty-fifth, but with improvement carrying over until the next morning. On the twenty-eighth, the fourth shock was administered with excellent results that were sustained. The man became cheerful, relaxed and hopeful for the future. "With followup psychotherapy, he developed insight into his illness and was discharged on visit, February 9, 1941. He went to work at his old job, was very happy and, when

he reported for an electroencephalographic recheck on August 28, appeared to be in a good social remission. His diagnosis was involutional psychosis, melancholia.

NOTE: This patient was returned from visit on October 27, 1941, because of increasing depression, and fear of death in addition to development of many somatic complaints. The picture the patient presented on the ward was similar to his previous admission, except that he frequently had swings of mood from depression to elation. It is noteworthy that there was no interview followup between the last reported condition on August 28 and the present relapse.

#### *Case 8*

E. F., a 53-year-old married housewife, was admitted on March 15, 1941. She had always been a quiet, very dependent person, very meticulous in all respects, who had to endure the complaints of a blind mother-in-law for 15 years of her married life. Three years prior to entry, she thought she had cancer of the gall bladder because she felt weak. She worried a good deal and developed anorexia. She had numerous physical complaints. One year before admission, she became depressed and wanted to die. For six months, she said she had Addison's disease.

On the ward, E. F. stated that she was blind; her body was rotting away; she couldn't walk; the nerves in her skin had no feeling; she could not breathe; there was rotting in the iris. She was markedly agitated and depressed. Physical examination showed nothing noteworthy aside from asthenic habitus and malnutrition. Her condition remained unchanged until treatment was begun and three seizures had been administered, following which she gave up all her bizarre ideas and made an excellent adjustment on the ward. However, on week-end visits home she became depressed, and former ideas recurred. Yet on return to the hospital, she adjusted well. This continued for four months before E. F. was able to adjust at home following intensive psychotherapy with both the patient and her husband after the psychodynamics of her illness became more evident. She was discharged on visit on August 23, 1941. The diagnosis was involutional psychosis, melancholia. Her present status is much improved, with a fair degree of social rehabilitation but with a tendency still present to blame her husband for having sent her to the hospital.

*Case 9*

E. V. D., a 53-year-old telephone switchboard operator, was admitted on April 18, 1941. She had always been closely attached to, and the sole support of, her aged, senile, blind mother, whose condition had been going downhill for the past eight years. For the past year, the patient had been anxious about her mother's increasing senility, had been below par physically, had been tired all the time, had lost weight and had not been keeping up with her former musical and social group activities. Two months before admission, the patient had sent her mother to a rest home since she no longer could care for her, and this preyed on her mind. She ate and slept poorly and 10 days before admission suddenly developed an acute panic state, with somatic delusions that her stomach was gone. She felt that now, with her mother taken from her, she no longer desired to live. Physically, E. V. D. was of indifferent habitus and appeared quite pale. The menopause had occurred five years before, with slight transitory depressed feelings at the time.

In the hospital, the woman was agitated, depressed, paranoid and self-accusatory but in view of the good personality assets in the case, the sudden onset and the strong reactive and paranoid features involved, it was felt that shock therapy would be superfluous. Under psychotherapy, the patient made a very adequate response in five weeks, although two brief panic-like episodes occurred. She was able to bear the news of her mother's death without upset and was discharged on visit, June 12, 1941. Her diagnosis was involuntional psychosis, melancholia; her present status, a good social remission.

*Case 10*

J. H., a 50-year-old single, female, comptometer operator, was admitted on March 24, 1941. She had always been very closely attached to her family of which she was the sole support. Eight weeks before admission, she had suffered a broken wrist which had disabled her and was somewhat slow in healing. After five weeks, she had begun to fear the loss of her job, had become depressed and unusually concerned over the health of other members of the family. Three days prior to entry, she suddenly became acutely disturbed when a water pipe in the cellar broke and she thought



all would be drowned. The next day, she felt that all their money was lost, that she was going to die, that her mind was gone. The family history was negative. Physically, the woman was of asthenic habitus, had a mild secondary anemia, slight enlargement of the thyroid isthmus without any concomitant signs of hyperthyroidism, and emotional hypertension of 180/104 which later subsided to 128/84. The menopause had occurred five years previously without any special symptomatology.

In the hospital, J. H. was confused, not entirely oriented, depressed, agitated, with much wringing of the hands and biting of finger nails. She felt death impending, declared that her stomach, heart, blood and brain were all gone, that her wrist was never going to heal and that the family was lost because all its money was gone. However, in view of the previously stable personality, the sudden onset of the psychosis, the presence of the broken wrist and financial insecurity, poor physical status, and finally the acute development of paranoid and hypochondriacal delusions which predominated in her picture, it was felt that in this case recovery would follow in a few weeks without shock therapy. With continuous tubs, mild sedation and psychotherapeutic interviews, the patient showed marked improvement within three weeks, and a fair degree of insight developed. Blood pressure was normal, and by the fourth week all delusions had disappeared. J. H. was discharged home on visit, May 2, 1941. A followup in August showed her working, happy and getting along well at home. The diagnosis was involutional psychosis, melancholia with paranoid features; the present status, a good social remission.

#### *Case 11*

H. A., a 27-year-old shipper in a gelatine factory was admitted on December 26, 1940. He had been a very "spineless" individual, lacking assertiveness, feeling sexually inadequate and generally inferior to the rest of his family. He was married by an aggressive young woman; and just as she was about to have their second child, he broke down after a prepsychotic development of about 10 months. He had become depressed at his mother's death early in 1940, which was shortly followed by a sister's commitment to a

state hospital with dementia praecox. He felt that this might happen to him. The mother had had an involutional psychosis of five years duration 20 years before. The father had been alcoholic. The patient began to lose interest in his work and his family in April while still worrying vaguely about the expenses of his wife's pregnancy. He began to feel that people were watching him, waiting for him to make various mistakes, looking for the first signs of his breakdown. He felt guilty about things he had not done. He left his job five weeks before admission, made two abortive suicidal attempts with gas but quit because he "didn't have the nerve to go through with it." He doubted his paternity of the children. Physically, the man was of athletic habitus and in good condition aside from complaints of generalized headache, for which no organic cause was found.

In the hospital, H. A. was depressed, cried a good deal, was paranoid and self-accusatory, worrying over adolescent masturbation. Shock therapy was begun, January 17, 1941, with resultant loss of delusions, increasing sociability and desire to go to work again. Good insight developed during the rest period after the third treatment on January 22. However, the man relapsed following a weekend home, returning with depressive and paranoid ideas. He received two more treatments which were again followed by remission of the symptomatology; and, as improvement appeared to be maintained, he was discharged on visit on February 15, 1941. H. A. returned to work but again became depressed, blamed himself for previous admissions to hospital, became quite paranoid in that he felt his wife was tampering with his food. Following a suicidal attempt, he was readmitted on April 16, 1941. Depression and ideas of guilt were predominant. His manner improved somewhat with intensive psychotherapy, but the essential content of the ideas did not change. Shock treatment was not given again, because it was felt that the transitory result which could be obtained in such an inadequate personality was not worth the trouble and risk involved in view of the fact that he had already evidenced a delayed recovery phase after one of the former shocks. While on absence, July 29, he made another suicidal attempt following ejaculatio praecox the night before. The patient's inadequate outlook persisted after readmission and he was transferred to another state hospital

on August 8, 1941. His diagnosis was manic-depressive, depressed, with paranoid features; his present status, relapse after brief post-treatment remission.

### *Case 12*

E. D., a 28-year-old married housewife, was admitted on November 9, 1940. She had always been a quiet person who kept to herself and had few friends. Three months prior to entry, she had had a laparotomy and uterine suspension operation, following which she began to feel that people were talking about her. She heard people on the radio say that her husband was going to divorce her and felt that her coffee had been poisoned. She also thought that her husband signalled to strangers by raising and lowering the window shades and that "television" was present in the house. She became very much depressed, made a suicidal attempt with camphor and is said to have had a convulsion following which she expressed the idea that she was half-man, half-woman.

In the hospital, E. D. was apprehensive, depressed, agitated, fearful, undertalkative, at times mute. She felt guilty about extra-marital relationships. She refused food and became quite excited on several occasions when she tried to force the door of the ward. Physical examination revealed an asthenic habitus. The woman made very little progress, and shock therapy was instituted on April 1, 1940. She was very resistive to treatment and the beta-erythroidin-hydrochloride had to be given up after the second treatment because of technical difficulties. Hyoscine was tried as a partial substitute, and manual extension was employed to diminish the intensity of the metrazol reaction. E. D. improved considerably after the third shock. She was more cheerful, did occupational therapy and mingled with other patients. She was tried on a week-end home, but returned with a complete relapse to her admission status. Treatment was reinstituted on May 2 with no improvement until after the seventh treatment and fifth shock had been administered on May 9, following which the woman showed marked improvement with developing insight. She was discharged on visit, May 17, 1941, after a very successful trial week-end at home. Her diagnosis was: undiagnosed psychosis, schizoaffective, with depressive features predominating. A followup on August 22, 1941, indicated that a good social remission had been maintained.

*Case 13*

H. K., a married woman of 38, was admitted November 27, 1940. She had had three previous attacks of depression, the third of a year in duration. She had been in mental hospitals but had never left one with any marked degree of improvement. The patient had always been a charming, active, intelligent woman who had tended in late years to keep to herself. Under intravenous sodium amytal the patient revealed that there was a great deal of marital insecurity due to physical incompatibility and sexual abstinence on the part of the husband, who appeared to be a very inadequate type of individual. Physically, the patient was of asthenic habitus.

In view of H. K.'s inaccessibility to psychotherapy because of her withdrawn, depressed state, shock therapy was instituted on December 13, 1940. After the third seizure, on the eighteenth, the woman became more spontaneous and talked freely at times, but still tended to relapse into her former state. Accordingly, two more treatments were given on the ninth and fourteenth of January, following which she made a good recovery with excellent insight. H. K. was discharged on visit on January 28, 1941, and followup some months later showed that she had been doing very well, especially after several psychotherapeutic interviews were had with her husband. The diagnosis was manic-depressive, depressed; the present status, a good social remission.

*Case 14*

A. C., a 37-year-old married salesman was admitted on February 3, 1941. He had formerly been quite successful in his work but had become physically incapacitated because of arthritis two years previously. He could not walk for six months, had severe pains in his legs and took to drinking. A. C., his wife and child were supported by the father to whom the patient had always been closely attached. In May, 1940, he had been able to get work again as an advertising manager of a small local newspaper, but broke down under the strain of overwork. Meantime, in June, his wife left him, mostly for financial reasons, taking the child with her. The patient had been "going down hill" since. During the six weeks prior to admission, he had become markedly depressed, was underactive and undertalkative, with partial loss of memory. He felt he could not

eat, that his bowels were paralyzed; and he placed special meaning on a skin eruption which appeared. Physical examination showed a markedly emaciated, asthenic individual with an eruption on face and scalp and evidence of general avitaminosis.

In the hospital, A. C. remained markedly slowed down, depressed, almost apathetic most of the time with often incoherent speech. He had to be constantly spoon-fed. Delusions that his bowels were stopped up and that his skin rash meant something that could not be talked about persisted. The man gained weight and the eruption cleared up on a high caloric diet fortified with vitamins and iron; but, despite this and intensive psychotherapy, the mental picture remained unchanged for six weeks. It was felt that the patient was in "a rut" and that, despite some similarity in this case to those of patients E. V. D. and J. H., Cases 9 and 10, the slow onset and the greater duration of the psychosis called for more drastic intervention. On March 19, 1941, the patient was regarded as being in fair physical condition and a treatment was given. Good muscular paresis was obtained with 1,600 mg. of beta-erythroidin-hydrochloride, and a satisfactory seizure was produced with 4½ cc. of metrazol. However, the man showed an undue amount of postseizure cyanosis, with apnea so severe that it required 3 cc. of 1-2,000 prostigmin and artificial respiration to bring him back to consciousness. He remained very weak for three days, but became coherent, no longer referred to his delusions and began to eat better. Shock treatment was discontinued because it was felt that the risk of complications was too great in this particular case. Treatment was continued with psychotherapy and vitamins, but with the exception of the original improvement and some desire to go home, A. C. remains depressed, has no interest in anything, and lacks insight. He is still in the hospital. The diagnosis was manic-depressive, depressed; the present status, improved.

#### PROCEDURE

Selection of cases was governed by these criteria: That the psychosis was of at least three months duration with progress at a standstill, i. e., the patient was in a "rut;" that the prepsychotic personality assets outweighed the liabilities; and that the patient was a good therapeutic risk. Two cases are reported, for contrast



purposes, in which these criteria were not fulfilled. These two patients, with involutional depression with excellent prognosis for a rapid, spontaneous recovery were intentionally not subjected to shock therapy but were closely followed, along with the treated cases.

The beta-erythroidin-hydrochloride modification of the metrazol convulsive shock was the treatment of choice. Extensive previous experience with this method by one of the writers (S. R. R.) had proven its value not only as a good shock agent but had demonstrated its freedom from fractures and other serious complications. The technique has been elsewhere described.<sup>10, 11</sup>

Treatments were given on alternate days until some sign of clinical improvement appeared within 48 hours following a treatment. If no change developed after six or seven shocks, the series was discontinued. Treatment was interrupted in two cases after the first and third shocks respectively when it was noted that these patients seemed to be so markedly weakened by the treatment that they had to remain in bed for the remainder of the day. In the other instances, as improvement was noted after any one convulsion, shock therapy was interrupted for several days, and the patient was followed with intensive psychotherapy for three to seven days. If improvement was progressive, metrazol was entirely discontinued. On the other hand, if this process of further "ripening" did not occur within the period stated, shock therapy was re-instituted and the same procedure followed until the more or less arbitrary maximum of treatments had been given. In one case in which no persistent response resulted after six treatments, this form of therapy was abandoned, since the writers felt that the possibility of brain damage from further convulsive therapy outweighed the very slight probability of improvement. Table 1 indicates the number and dates of treatments, shocks and dosage given in each case.

Psychotherapy was consistently followed through in each case as a completely individualized undertaking. At every vantage point, whether it developed during a minor improvement in the patient's desire to get well, temporarily increased accessibility, or through the careful use of intravenous sodium amytal, the search for the psychodynamics of the psychosis was pursued in the constant at-



TABLE 1

Patient	Hospital Case No.	Age	Diagnosis	No. of treatments	No. of shocks produced	Dates of treatments	Average dose Beta-erythroidin-hydrochloride	Average dose metrazol
W. B.	38691	39	Schizophrenia, paranoid	3	3	Nov. 7-9-13	1,633 mg.	5.8 cc.
A. O.	38548	19	Schizophrenia, paranoid	4**	4	Jan. 1-6*-11-21	1,200 mg.	4.3 cc.
H. R.	39341	26	Schizophrenia, catatonic	6	6	May 1-5-8-12-15-27	1,000 mg.	4.5 cc.
R. H.	38696	52	Involuntional psychosis, melancholia	6	5	Nov. 5-7-9-12*-14-19	950 mg.	6.0 cc.
H. J.	38789	54	Involuntional psychosis, melancholia	7	4	Nov. 25-27-29 Dec. 2*-10*-12*-15	1,300 mg.	5.0 cc.
N. S.	39090	50	Involuntional psychosis, melancholia	6	3	Jan. 20*-23-25-27*-29*-31	1,500 mg.	5.5 cc.
P. M.	39084	47	Involuntional psychosis, melancholia	4	4	Jan. 21-23-25-27	1,485 mg.	4.0 cc.
E. F.	39452	53	Involuntional psychosis, melancholia	3	3	Mar. 26-28; Apr. 1	1,400 mg.	4.5 cc.
E. V. D.	39650	53	Involuntional psychosis, melancholia	0	0	.....	....	....
J. H.	39499	50	Involuntional psychosis, melancholia	0	0	.....	....	....
H. K.	38859	38	Manic-depressive, depressed	5	5	Dec. 13-15-18; Jan. 9-14	1,350 mg.	4.5 cc.
A. C.	39211	37	Manic-depressive, depressed	1	1	Mar. 19	1,600 mg.	4.5 cc.
H. A.	39017	29	Undiagnosed psychosis (schizoaffective)	5	5	Jan. 17-20-22; Feb. 5-7	1,460 mg.	4.4 cc.
E. D.	38764	28	Undiagnosed psychosis (schizoaffective)	7	5	Apr. 1-3*-9 May 2-5-8*-9	1,000 mg.	4.5 cc.
				56	48		1,323 mg.	4.6 cc.

\* no seizure occurred.

\*\* one electric shock given during contrast studies.

tempt to clarify the situation both for the therapist and the patient. The followup interview was stressed in the 12 cases which were discharged home supplemented with reports from the various social agencies whose aid was enlisted in solving some of the occupational and social problems from which the patients had sought refuge in their flight into the psychoses. Most of the patients were seen every week or two for at least three months. The present status of each patient (as of the month of September, 1941) was evaluated by a member of the psychiatric staff who had followed the case since admission to the hospital.

The electroencephalographic tracings were made and interpreted by one of the writers (K. H. F.). One or more EEG's were taken during the static pretreatment period and were followed by tracings during treatments, after treatments, within one week after termination of the course and finally, whenever possible, at the end of the followup period which varied from four to eight months after the treatment series had been completed.

A six-channel apparatus of the Grass make was used, the six simultaneous recordings being obtained over the frontal, precentral, and occipital areas of each hemisphere. The indifferent electrodes were placed over the mastoids. Records were taken with the eyes closed and the patient lying down.

### RESULTS

The clinical results are shown in Table 2. Of the 14 patients studied, 12 were discharged home, of whom two were improved, seven markedly improved, and three in good social remission. Of the two remaining patients, one was unimproved and was transferred to another hospital, and the other, although improved, had to remain in the hospital because of difficulties in the home. The four descriptive categories employed are defined in the footnote to Table 2. At the end of the followup period in September, 1941, nine patients were at home enjoying good social remissions; one improved (W. B.) and one markedly improved (E. F.) case had shown little change, but were still doing satisfactorily at home; one markedly improved case (H. A.) had relapsed and after readmission had had to be transferred to another hospital; another (A. C.) remained improved still requiring hospital care; and a catatonic of

TABLE 2

Patient	Sex	Admission date	Discharge date	Result at time of discharge	Results at time of followup in September, 1941
W. B.	M	Oct. 28, 1940	On visit Dec. 10, 1940	Improved†	Improved
A. O.	F	Oct. 2, 1940	On visit Feb. 20, 1941	Improved	Social remission
H. R.	F	Feb. 27, 1941	Transferred June 11, 1941	Unimproved*	Unimproved (transferred to Worcester State Hospital)
R. H.	M	Oct. 29, 1940	On visit Dec. 4, 1940	Social remission‡	Social remission
H. J.	M	Nov. 15, 1940	On visit Jan. 5, 1941	Markedly improved**	Social remission
N. S.	M	Jan. 8, 1941	On visit Feb. 7, 1941	Markedly improved	Social remission
P. M.	M	Jan. 16, 1941	On visit Feb. 9, 1941	Social remission	Social remission
E. F.	F	Mar. 15, 1941	On visit Aug. 23, 1941	Markedly improved	Markedly improved
E. V. D.	F	Apr. 18, 1941	On visit June 12, 1941	Markedly improved	Social remission
J. H.	F	Mar. 24, 1941	On visit May 2, 1941	Markedly improved	Social remission
H. K.	F	Nov. 27, 1940	On visit Jan. 28, 1941	Social remission	Social remission
A. C.	M	Feb. 3, 1941	Undischarged	Improved	Improved (remains at Boston Psychopathic Hospital)
H. A.	M	Dec. 26, 1940 (Discharged on visit Feb. 15, 1941, re-admitted on April 16, 1941)	Transferred Aug. 5, 1941	Markedly improved	Unimproved (transferred to Grafton State Hospital)
E. D.	F	Nov. 9, 1940	On visit May 27, 1941	Markedly improved	Social remission

NOTE: \*\*\*Unimproved"—Condition essentially the same as upon admission.

††Improved"—Acute psychotic material subsided but insight only partial at best; requires supervision.

\*\*\*Markedly improved"—Insight nearly complete or complete but no return as yet to independent unsupervised work; fair social readjustment.

‡‡Social remission"—Complete insight present; doing housework or outside work satisfactorily; good social readjustment.

three years duration (H. R.) was still unimproved when interviewed at the hospital to which she had been transferred. Of the 12 cases receiving shock therapy, good results were obtained in eight out of nine depressive conditions and in two out of three schizophrenic cases. There is reason to believe that one of the schizophrenic cases (A. O.) showed many affective features.

The two cases treated by psychotherapy alone achieved good social remissions which have been maintained.

No fractures or other disabling complications occurred in any of these cases treated.

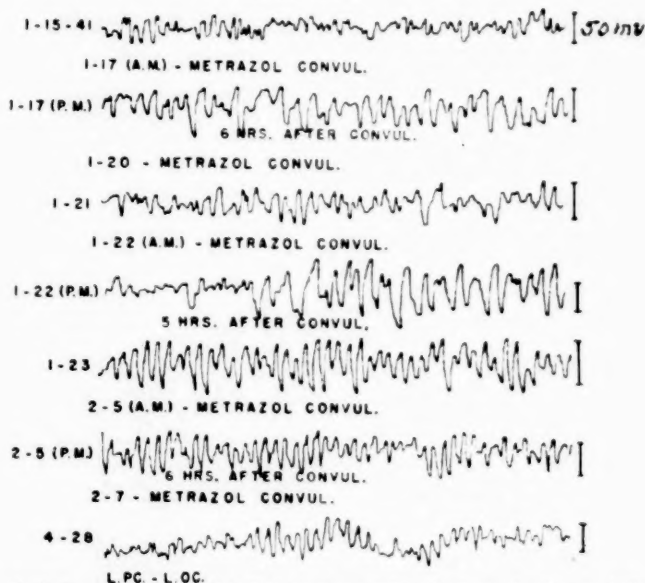
#### ELECTROENCEPHALOGRAPHIC STUDIES

In this present series, electroencephalographic studies were made on 13 cases receiving metrazol. In none, did permanent changes in the EEG pattern develop. This is probably accounted for by the fact that no case received more than seven metrazol seizures. In eight of the 13 cases (R. H., G. O., A. O., H. A., E. O., J. H., H. K., and E. F.), temporary abnormal changes (slow 4 to 7 per second cycles) developed lasting from several hours to three weeks (Figs. 1 and 2). In three of these cases (H. A., J. H., and E. F.), the last posttreatment records had improved over the pretreatment records. In the remaining five of the 13 cases (W. B., H. R., N. S., P. M., and A. C.), no abnormal changes in the EEG tracings resulted except during and immediately following the convulsions.

Abnormal changes in the cerebral electrical potentials occur in all cases receiving metrazol during and for a period of one-half to three or four hours following the convulsion.<sup>13, 14</sup> In a previous study by Finley and Lesko,<sup>12</sup> it was found that in certain cases abnormal patterns persisted for several days or weeks (usually in cases receiving 10 or more metrazol convulsions) while in two cases receiving 19 to 20 convulsions permanent changes in the EEG patterns resulted.

The electroencephalographic tracings taken before shock therapy showed records which varied from completely normal patterns to those in which considerable abnormal activity was present. Although in two instances—as has already been noted—abnormalities developing after treatment persisted for several days (Fig. 2), the findings of no permanent changes in any of the patients treated are

Fig. 1  
CASE H. A.



Illustrated are a series of EEG tracings taken before, during and following the metrazol treatment.

The first sample (1-15-41) shows an irregular pattern with traces of rapid 20 per second cycles, a type of abnormal pattern not uncommon in the affective or involutional cases.

The second sample (1-17, p. m.) shows the disappearance of rapid activity and the appearance of abnormal slow cycles, a residual of the metrazol convulsion six hours before.

The third sample (1-21) shows some residual slow activity with some traces of rapid cycles 24 hours after the preceding metrazol injection.

The fourth sample (1-22, p. m.) again shows the reappearance of slow high voltage cycles five hours after the third metrazol injection.

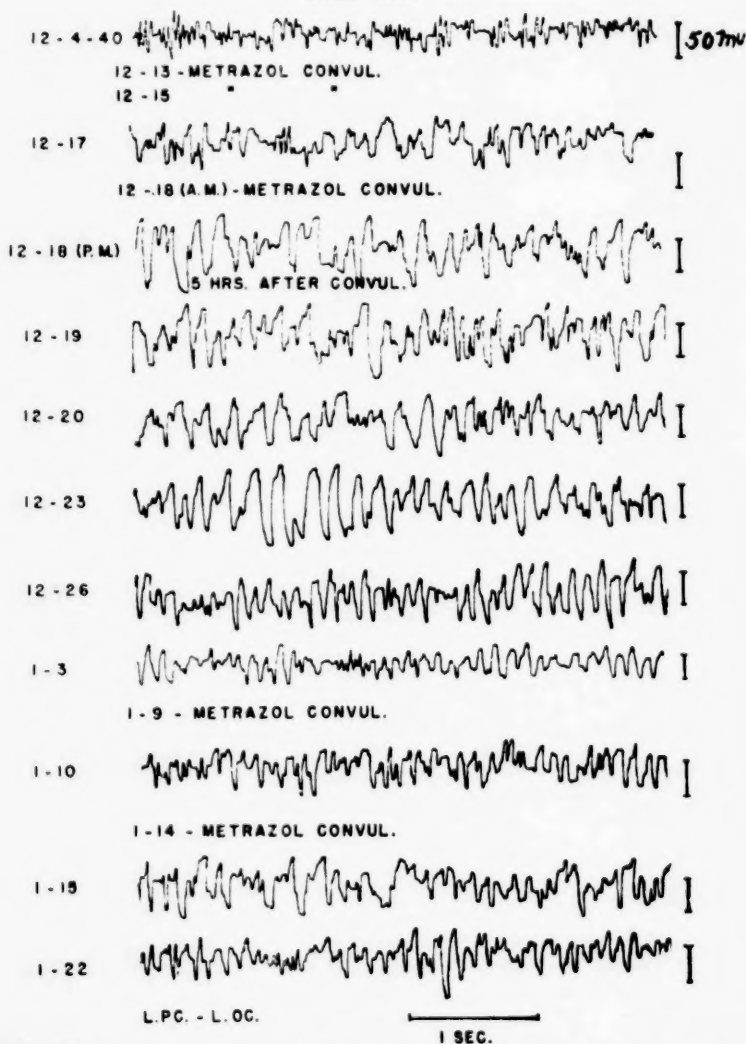
The fifth sample on the following day shows the disappearance of slow activity and a fairly normal pattern.

The sixth sample (2-5, p. m.) taken six hours after the fifth metrazol injection shows a fairly normal pattern suggesting that, in this instance, the brain potentials have developed some resistance to the toxic effects of the metrazol.

The seventh and last tracing taken two and one-half months after the sixth and last metrazol injection shows a fairly normal record with distinctly less rapid activity than the first tracing taken before metrazol was instituted.

in contrast to the more lasting changes in EEG's obtained in the series of patients who received an average of 10 to 15 treatments.<sup>12</sup> No correlation was found between changes in EEG's and clinical improvement.

Fig. 2  
CASE H. K.



Samples of tracings taken before, during, and following a series of metrazol injections illustrating how abnormal activity may persist for several days after a metrazol convulsion.

The first pretreatment tracing (12-4-40) is abnormal showing a predominance of organized rapid 20 to 25 per second cycles in addition to random square topped and spiked normal and slow cycles.

The second tracing (12-17) taken two days after the second metrazol convulsion (12-15) shows an increase in slow activity.



The EEG tracings on this series of cases demonstrate that there is considerable individual variation in the vulnerability of the cerebral electrical potentials to metrazol. The absence of any permanent abnormal changes in the EEG pattern reinforces the opinion of a previous study<sup>12</sup> that if permanent alterations of the cerebral electrical potentials are to be avoided a series of treatments under 10 should be adhered to.

EEG's were also made during the administration of the beta-erythroidin-hydrochloride. No evidence was found to indicate that the drug had the slightest effect upon cerebral electrical potentials. In one instance in which the seizure apparently did not occur, slow activity developed about 15 seconds after the metrazol injection. In another instance, slow activity appeared 12 seconds after the metrazol injection and preceding the visible seizure.

#### DISCUSSION

The writers have attempted to show how shock therapy can be safely utilized as an important, if not an essential, adjuvant in the treatment of selected mental patients. No attempt has been made to present any overwhelming statistical proof of the value of the contentions which have been made. However, it is felt that the case material is sufficiently representative of the problems of therapy which face the psychiatrist working in the hospital so that each case is significant in itself. For this reason, the procedure and its application to each case have been presented in some detail, with repeated emphasis upon the factors involved in the selection of patients and the spacing and limitation of shock treatments. The rôle of psychotherapy and followup care together with the utilization of all possible extra-hospital agencies is stressed.

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The third tracing (12-18, p. m.) five hours after the third metrazol convulsion shows a further increase of slow activity. This slow activity persisted for five days as illustrated in the following three samples (12-19), (12-20), and (12-23).

On the eighth day, the tracing obtained (12-26) shows a disappearance of slow activity and an increase of normal cycles and in addition a decrease of rapid activity when compared with the pretreatment record (12-4-40).

Samples 1-10 (41) and 1-15 show a reappearance of slow activity and some rapid activity following further metrazol convulsions.

The final tracing (1-22) obtained eight days after the last metrazol convulsion is improved over the pretreatment tracing (12-4-40) in the decrease of rapid activity.

It is believed that the utilization of the point of view presented in this paper will tend to foster a wider use of shock therapy and yet at the same time guarantee a more careful selection of cases. A byproduct of better selection will be increased accuracy in the evaluation of the results of treatment.

#### SUMMARY

1. A middle-of-the-road method is suggested for the use of shock therapy in the treatment of mental cases.
2. Selection of cases, a safe therapeutic agent, spacing and limitation of treatments and the rôle of psychotherapy are stressed.
3. Fourteen case studies are presented in which these propositions are demonstrated.
4. Electroencephalographic tracings were made before, during and after treatment with beta-erythroidin-hydrochloride and metrazol.

Boston Psychopathic Hospital  
Boston, Mass.

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## PROGNOSIS IN MANIC-DEPRESSIVE AND SCHIZOPHRENIC CONDITIONS FOLLOWING SHOCK TREATMENT\*

BY THOMAS A. C. RENNIE, M. D.

With the Help of J. B. Fowler, A. B.

One of the main difficulties in evaluating the efficacy of shock therapies lies in the meagerness of published reports on long-term followup of such cases. Most reports of results are statements of the condition of the patient at the time of discharge from the hospital. This article is a study of 121 patients treated with shock methods and their condition at one to three years following the termination of treatment.

The material is from the Henry Phipps Psychiatric Clinic of The Johns Hopkins Hospital, where shock therapy with insulin was begun late in the year 1936. Up to September, 1941, under the direct supervision of Dr. Wendell Muncie, 121 patients had been treated and discharged from the clinic. The earlier cases have now been out of the hospital three and one-half years. All but five of these cases have been investigated successfully for followup material. The results will show that the effects of shock therapy cannot be evaluated accurately at the time of the termination of treatment. Relapses occur and the first impression of optimism gives way as we scrutinize the long-term results.

Insulin deep-coma therapy was given to 59 patients. Insulin and metrazol were used in 29 cases. Metrazol alone (or with curare) was used in 16 cases. Electric shock was administered in 15 and in various combinations with another agent in six additional cases. With insulin, the average number of treatments was 36, but in cases where satisfactory improvement did not occur, as many as 91 comas were given. The average number of metrazol convulsions was 14. (The lowest number was five, the greatest 29.) The average number of electric convulsions produced was eight. (The lowest number was two, the highest 13.) In many patients, psychotherapy was carried on at the same time.

\*This case material is from the Henry Phipps Psychiatric Clinic. This study was made possible by the help of the John and Mary R. Markle Foundation.

In the first year, only eight patients, with exceedingly poor prognoses, were treated. Thereafter, the treatment was given systematically and aggressively, the insulin procedure following more closely the recommendations of Frostig. There was no attempt at a rigid selection of favorable cases.

The average duration of psychosis was 12 months (ranging from a single day in one, to nine years in another). The average duration of illness in those who recovered was five months; for those unimproved, 13 months. Illnesses of short duration have a far better prognosis than those of long duration.

In 88 patients the attack was the first one; the other 33 had had previous attacks ranging from two to 15. Of the favorable outcome group, 36, or 73.4 per cent, were in their first attack. Of the unfavorable outcome group, 50, or 75.7 per cent, were in their first attack. A first attack, therefore, apparently makes for no more favorable an outcome.

Age does not seem a significant factor, since the average age of the favorable group (28.7 yrs.) does not differ appreciably from the unfavorable (29.1 yrs.). Only five of the patients were over the age of 50; three of these recovered from manic-depressive conditions.

Seventy of the total group treated were schizophrenics; 46 were manic-depressives; and the remaining five showed other types of disturbances. They were distributed as follows (Table 1).

TABLE 1.

Purely manic-depressives (4 manics, 26 depressives, 4 cyclic).....	34
Manic-depressives with schizophrenic features (1 manic, 11 depr.)	12
Schizophrenics .....	58
Probably schizophrenics .....	7
Schizophrenics with affective features (1 manic, 2 depr.).....	3
Schizophrenia in a patient with a previous depression.....	1
Schizophrenic features in a case of profound hypochondriasis....	1
Postpartum excitement .....	1
Delirium, paranoid panic, depressive features .....	1
Tension, anxiety attacks, pylorospasm .....	1
Obsessive ruminative tension state; without and with depression..	2
Total .....	121

TABLE 2. CONDITION ON DISCHARGE AND OUTCOME BY REACTION TYPE

Reaction Type	Recovery		Definite Imp.		Slight Imp.		Unimproved		Outcome		
	Main- tained	Not maint.	Un- known	Main- tained	Not maint.	Un- known	Un- known	Un- known	Fav.	Unfav.	Unkn.
Manic-depressive .....	7	1		9	1	1					
(Manic-4) .....	(2)	(1)		(1)							
(Depr.-26) .....	(4)			(7)	(1)	(1)		(5)			
(Cycl.-4) .....	(1)			(1)				(2)			
M-D w. Schz. feat. ....	3	1		4	1	1		2	8	4	
(Manic-1) .....					(1)						
(Depr.-10) .....	(3)	(1)		(4)				(1)			
(Cycl.-1) .....								(1)			
Schizophrenics .....	4	2	1	9	3			15	41	2	
† Schizophrenics .....	1*			3**	1†	1		21	5	1	1
Sch. w. M-D feat. ....		1		2		1‡		2	1		
(Manic-1) .....				(1)							
(Depr.-2) .....	(1)			(1)							
Schz. (prev. Depr.) .....								1	1		
Schz. feat. w. ....											
Hypochond. ....					1					1	
Postpart. excit. ....				1					1		
Delir., par., panic, w. dep. feat.				1					1		
Tension, anx. atts., pylorospasm					1					1	
Obsess., rum., ten. st. ....									1		
Obsess., rum., w. dep. ....								1		1	
Total .....									49	66	6

\*With homosexual panic.

\*\*One with obsession-compulsions; one with acute confusion.

†Excitement in a psychopathic personality. ‡Schz.

‡Postpartum, agit. depr. †Schz.



If one groups all the manic-depressive cases (46), it is found that in 43 of known present status 55.8 per cent have shown a favorable long-term outcome. The 67 schizophrenic patients with known present status show a favorable outcome of 32.8 per cent. The details of the condition on discharge and final outcome in relation to clinical grouping are presented in Table 2.

#### OUTCOME

In evaluating this form of treatment, the writer has considered first the effect on the patient's behavior during and at the end of treatment; second, the condition on discharge after he has consolidated his gains; and third, his present status in the interval elapsing following discharge from the clinic.

#### RESPONSE DURING AND AT END OF TREATMENT

In evaluating the patient's response to treatment while it was being given and immediately at its termination, a favorable response is found in 78 cases (64.4 per cent). The results in the two large groups are shown by Table 3.

TABLE 3. IMMEDIATE FAVORABLE RESPONSE AT END OF SHOCK THERAPY

	Per cent
Pure manic-depressive cases (34) .....	76
Manic-depressive cases with schizophrenic features (12).....	75
Total manic-depressive cases (46) .....	75.5
Pure schizophrenic cases (58) .....	46
Schizophrenic cases with affective features (12) .....	100
Total schizophrenic cases (70) .....	55

The manic-depressive cases showing immediate response (improved, or improved-slumped-improved) show 75.5 per cent favorable results. The immediate favorable response of the total group of schizophrenics to shock therapy (improved, or improved-slumped-improved) is 55 per cent. This is a gratifying number but, as shall be seen later, more than one-half of this schizophrenic group relapsed, and the final outcome figure is definitely less encouraging. Nonetheless, if these findings are compared with the results at the time of discharge, in a large series of schizophrenic cases not treated by shock methods<sup>1</sup> (i. e., 42 per cent who showed a favorable response at the time of discharge from the clinic) the shock method would seem to offer some advantages.

## DISCUSSION OF STATUS ON DISCHARGE

For the discharge condition, these patients have been grouped according to four levels. In the recovery group, are 21 patients; 39 achieved definite improvement; 31 slight but some improvement; while 30 patients had to be considered unimproved on discharge. Considering any improvement at all as a favorable outcome, it is found that 91 (75.2 per cent) of them achieved this status, against 30 (24.8 per cent) unfavorable. On the other hand, when one comes to analyze the present status of the slightly improved group of 31 patients, it is found that they did not do well as a group, and in retrospect can receive but poor prognosis. They would, then, be included as an equivocal status group at the time of discharge, which would change the relative proportions of the discharge conditions to 49.6 per cent favorable (recovered and definitely improved), 24.8 per cent unfavorable (unimproved on discharge), and 25.6 per cent equivocal (slightly improved on discharge, but did poorly on followup.)

OUTCOME OF TREATMENT AFTER DISCHARGE FROM HOSPITAL  
(TWO MONTHS TO THREE AND ONE-HALF YEARS)

To establish the present status of the 121 shock cases, contact has been made with each patient or his family and letters have been written to the family physician or referring psychiatrist of each, with a request for his opinion regarding his patient's response to shock. Four of the former patients have made no response. The father of another has written in detail regarding his son but, without formal examination of the patient by the author, it is impossible to determine whether he is progressing or even holding the definite improvement he achieved while at the clinic. Therefore, this case and one other with whom it was felt it would be inadvisable to make contact have been included among those whose outcome is unknown.

The findings regarding the group as a whole follow:

A. *Unimproved Group*

When the patient left the clinic without showing improvement after a fair lapse of time following shock treatment, it was assumed that the treatment was without benefit—whether he made an

ultimate recovery or not. As it happens, outcome in this group has been poor. It is found that of the 30 patients (with only one schizophrenic not heard from), only two of the schizophrenics have escaped further hospitalization or complete incapacitation at home. Two of those hospitalized (a schizophrenic—one year; and a cyclothyme with possible schizophrenic features—four months) are now productive at home. One schizophrenic, still psychotic, died of tuberculosis in a state hospital. The others of this unimproved group are still hospitalized. There were five depressives, one depressive with schizophrenic features, one schizophrenic with previous depression, 16 other schizophrenics, and one obsessive with depression.

#### B. *Slightly Improved Group*

To attribute favorable results from shock treatment in patients who left the clinic with some, but only slight, improvement over their admission condition, one presupposes ordinarily a fairly steady progress without further hospitalization.

Only five of these 31 slightly improved patients made a satisfactory progress. One is back at work and considered recovered (paranoid schizophrenic). Two others are working with occasional and less troublesome symptoms (the first with depression with homicidal panic and with paranoid and schizophrenic features; the second with an obsessive-compulsive state). One patient with a postpartum psychosis with features of an agitated depression and possible schizophrenia is much improved. The fifth is a catatonic schizophrenic who is barely within the category of a favorable outcome. He is still nonproductive but is reported by his physician brother to be surprisingly well.

Of the 23 of this outcome group who have made an unfavorable progress, one has committed suicide (depression), 18 have had to be rehospitalized, and the others are carried as family invalids. Of these hospital and family invalids, 15 are schizophrenics, six are primarily depressives, and one is a cyclothymic case.

Three of those who were discharged in a slightly improved condition have not been heard from (one schizophrenic and two depressives).

### C. *Definitely Improved Group*

The largest group of shock patients falls into the category of definite improvement on discharge (39 cases). Of these 39 persons, 29 are known to have done well, eight to have done poorly, the conditions of two are unknown. Only one of the 29 who are known to have done well has been rehospitalized.

All of this group are productive—one of them “better than before” (schizophrenic). Reports on nine of the group speak of some residual symptoms or of continued steady improvement or of the case as much improved. This group contains two schizophrenics, one possible schizophrenic with obsessive thinking, three depressives, one depressive with schizophrenic features, one schizophrenic with manic features, and one case of postpartum excitement.

Complete recovery is claimed for the other 18 patients: eight schizophrenics (one with depressive features); seven depressives (two with schizophrenic features); one manic; one cyclothyme; and one case of delirium.

Of the remaining 10 patients in the group, eight have not maintained their definite improvement at the time of discharge. Six of these have been rehospitalized (three schizophrenics; one manic with schizophrenic features; one agitated depressive; one patient with a tension state). One probable schizophrenic is a family invalid, and one patient with a case of marked hypochondriasis with schizophrenic features is productive but has increasing body delusions.

This leaves two patients in the group, and about them there is no adequate information. One depressive, it was felt wise not to get in touch with because of his equivocal condition. One schizophrenic is reported upon in detail by his father, but the letter leaves a feeling that he is in an equivocal condition.

### D. *Recovered Group*

Twenty-one patients showed recovery on discharge. One of these has not been heard from. Recovery has been maintained by 15. They comprise four schizophrenics; three depressives with schizophrenic features; four other depressives; two manics; one cyclothyme and one probable schizophrenic with homosexual panic. The

remaining five have had definite slumps (two schizophrenics; one schizophrenic with depressive features; one manic; and one depressive with schizophrenic features). The manic patient committed suicide six months after leaving the hospital. The others have all been rehospitalized; and only one is now out of the hospital.

### CONCLUSIONS

It is found, then, that an improved or recovered condition has been maintained in the case of 15 patients recovered on discharge, 29 definitely improved, and five slightly improved on discharge, giving a total of 49 favorable outcomes, or 40.5 per cent of the total. The 54.5 per cent with unfavorable outcome are those 30 discharged as unimproved, 23 as slightly improved who have made no progress, and the eight definitely improved and five recovered ones who relapsed. The six patients (four not heard from) with an equivocal outcome comprise the other 5 per cent. Consolidation of the final findings of outcome from shock treatment is shown in Table 4.

TABLE 4. RESPONSE TO SHOCK TREATMENT

<i>Manic-Depressives and Schizophrenics</i>		
At end of Shock Therapy		
64.4% Favorable: 35.6% Unfavorable (All Reactions)		
Manic-depressives	46 patients	75.5% imp. (35 out of 46)
Schizophrenics	70 patients	55% imp. (39 out of 70)
At end of Clinic Stay		
75.2% Favorable: 24.8% Unfavorable (All Reactions)		
Manic-depressives	46 patients	84.7% imp. (12 recov. 16 imp. 11 sl. imp. 7 unimp.)
Schizophrenics	70 patients	68.5% imp. (9 recov. 20 imp. 19 sl. imp. 22 unimp.)
At end of Followup Period (2 mos. to 3½ yrs.)		
40.5% Favorable: 54.5% Unfavorable (All Reactions)		
Manic-depressives	43 patients	55.8% imp. (2 unknown, 1 equivocal)
Schizophrenics	67 patients	32.8% imp. (2 unknown, 1 equivocal)

Scrutiny of these figures reveals an interesting fact, namely, that in the group as a whole, the results are better at the time of discharge from the clinic (75.2 per cent) than are obtained at the termination of shock procedure (64.6 per cent). This means, of course, that beneficial general psychiatric treatment continued after the shock procedure was terminated. Moreover, some patients had

improved during the early part of their stay but not to a satisfactory extent, and shock therapy was tried with the hope of increasing the improvement. Those who received no additional benefit from shock treatment comprise a large percentage of those who were unimproved at the end of the shock treatment, yet left the clinic in better condition than on admission. The results justify a conclusion that shock therapy is an important adjunct to general therapy but can never hope to replace the total psychiatric therapeutic procedure.

Once again we are interested in the final outcome of the two large groups of patients, namely, the manic-depressive disorders and the schizophrenics.

The original optimism, if one bases conclusions on the status at the end of shock therapy, is seen to disappear when one follows the longer course. This is immediately evident in Table 5.

TABLE 5

	Favorable Immediate response Per cent	Favorable Final outcome Per cent
Pure manic-depressive cases (34) .....	76	51
Manic-depressive with schizophrenic features (12).....	75	66.6
Total manic-depressives (46) .....	75.5	55.8
Schizophrenics (70) .....	55	32.8

The immediately striking fact is the large shift in the number of schizophrenics who relapsed following treatment, a drop from 55 per cent to 32.8 per cent. If these findings are compared with the results in a large series of schizophrenic cases treated without shock methods,<sup>1</sup> one finds the following results:

	Condition on discharge	Followup status
Nonshock cases	42% well or improved	35% Recovery 17% Some improvement (9 yr. followup)
Shock therapy cases	68.5% well or improved	32.8% Recovery or improved (1-3 yr. followup)

Comparison of the two methods in schizophrenia, therefore, shows improvement in the status at the time of discharge in those



patients who have had shock therapy (68.5 per cent versus 42 per cent). When one follows these patients, however, over a period of several years, the difference disappears. Only 32.8 per cent of the shock-treated schizophrenics maintained a favorable outcome. Nor does this 32.8 per cent represent complete recoveries. It includes all patients who have shown consistent improvement. It seems doubtful, therefore, whether shock therapy in schizophrenia, considering the long-term development, offers any advantage in the final outcome of the schizophrenic condition. It seems likely that a large factor in this lies in the fact that, following fairly rapid improvement with shock methods, it is often impossible to get the patient to cooperate in further intensive psychotherapeutic investigation. Where the hospital personnel is limited and the hospital population is large, the shock procedure is undoubtedly of value since it represents an incisive therapeutic weapon. Where, however, intensive psychotherapeutic help is available, it seems doubtful that the shock procedures, weighed against their hazards, offer any striking advantage in the outcome of schizophrenia.

The response in the affective conditions, however, is gratifying and better maintained. In this group one finds 75.5 per cent showing an immediate response to shock therapy which is favorable. In a comparable series of 200 cases of "pure" manic-depressive disorders<sup>2</sup> not treated by shock methods, one finds that three-fourths of the cases are well or improved at the time of discharge. This present series, however, contains 12 examples of manic-depressive conditions with schizophrenic features, so that the 75.5 per cent response represents a more favorable result. However, when this group of shock-treated manic-depressive patients is followed over a period of one to three years, one again finds a drop in favorable figures from 75.5 per cent to 55.8 per cent. Comparison with the control series is not valid since it represents a 20 to 25-year followup in which 79 per cent of the series had recurrent attacks later in life.

When one scrutinizes the duration of the psychosis in order to discover whether the shock procedure actually shortens the length of the attack, the only available way to determine this is to compute the length of time between the onset of treatment and the achievement of recovery. It has been emphasized that in psychotherapy

the first history-taking interview is, in itself, the beginning of the therapy. In the case of shock therapy, the first shock treatment would constitute the first step in amelioration by means of shock. Therefore, these durations of attacks from beginning of therapy to achievement of recovery in two sets of patients, with shock therapy and with nonshock therapy, have been computed and compared. The results are as follows:

	Nonshock treatment	Shock treatment
Manic-depressive	3.6 months (41 patients)	2.5 months (12 patients)
Schizophrenics	3.4 months (22 patients)	4.2 months ( 9 patients)

In attempting to compute the duration of nonshock treatment, the writer originally selected findings from a study on prognosis in the manic-depressives<sup>2</sup> and from a published study on recovered schizophrenics,<sup>3</sup> both drawing on early cases admitted to the clinic. The duration of treatment in the clinic for the manic-depressives averaged 2.8 months, and for the schizophrenics 3.4 months as given in the foregoing. Realizing that in the early days of the clinic, patients were discharged after a shorter hospital stay, an attempt was made to evaluate the duration in cases admitted from 1937 to 1940, inclusive, contemporary to the shock cases. This average of duration was found in the manic-depressives to have lengthened to 3.6 months. It was impossible to compute this in the case of schizophrenics because from 1937 to 1940 practically no nonshock-treated patients were considered recovered, and the older, briefly hospitalized cases had to stand. It is idle to speculate what the duration of treatment (nonshock) of contemporary recovered schizophrenics would be, but it would certainly be greater than a 3.4 months average.

All one can say, then, is that shock treatment among the clinic's patients has decreased the duration of manic-depressive attacks. This factor among the schizophrenics is equivocal. The procedure has another advantage, however. Where it is used as symptomatic therapy, it commonly makes the management of the patient much easier; and, especially with insulin, the writer has found that it gave a physiological boost resulting in improved appetite, weight gain, better sleep, reduction in the use of sedatives, and four or five

hours during treatment of sedation-like effect, all of which makes the management of many patients easier.

#### SUMMARY

1. Followup results are presented in a group of 121 patients treated by shock methods. 2. Recovery after shock treatment is more frequent in manic-depressive conditions than in schizophrenic conditions. 3. Recovery after shock treatment is more frequent in illnesses of short duration than in those of long duration. 4. The present findings show that the onset span averaged five months in the most favorable outcome group and 13 months in the most unfavorable. 5. The attack was the first in the case of 73.4 per cent of all those who had favorable outcomes and of 75.7 per cent of the unfavorable outcome group. Recovery after shock treatment, therefore, is not dependent on illness being a first attack. 6. The average age of those who did well and those who did not differed by less than a year (28.7 years in the favorable outcome group and 29.1 years in the unfavorable). Under the 50 to 60-year decade, age does not seem to be a significant factor. 7. A favorable response to shock at termination of treatment was found in 64.4 per cent of these 121 patients. 8. The favorable immediate response was increased to 75.2 per cent in those who, at the time of discharge, showed some improvement. 9. However, gains made in the clinic were held by only 40.5 per cent of the entire group, leaving 54.5 per cent with a definitely poor outcome and 1.2 per cent in a questionable status. No response to followup inquiries was obtainable in 3.3 per cent of the group. 10. Of the manic-depressives, 75.5 per cent were improved at the end of shock treatment. This compares with 70.7 per cent of 208 nonshock-treated manic-depressives. Of the schizophrenics, 55 per cent were improved at the end of shock treatment, compared with 42 per cent of 500 nonshock-treated schizophrenics. 11. Of the manic-depressives, 84.7 per cent were improved or recovered on discharge, as compared with 70.7 per cent of the nonshock-treated manic-depressives, and 68.5 per cent of these schizophrenics were discharged improved or recovered, while only 42 per cent of the nonshock-treated schizophrenics were considered recovered or improved on discharge. 12. Among these shock-treated patients, the condition at from two months to three

and one-half years later was improved or recovered in 55.8 per cent of the patients with manic-depressive disorder and in 32.8 per cent of the schizophrenics. Of the 208 nonshock-treated manic-depressives, 58.4 per cent were improved or recovered at the end of three and one-half years and of the 500 nonshock-treated schizophrenics, 52.2 per cent had a favorable outcome at the end of nine years. The striking finding lies in the large number of schizophrenics who relapsed following shock treatment. 13. Shock treatment seems, on the average, to shorten the period of hospitalization in manic-depressives by 1.1 months. 14. The methods offer other advantages in the management of the psychotic patient.

The Payne Whitney Psychiatric Clinic  
New York Hospital  
And the Department of Psychiatry  
Cornell University Medical College  
New York, N. Y.

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## EXPERIENCE WITH 3,057 ADMINISTRATIONS OF CURARE TO 232 PSYCHOTIC PATIENTS TREATED WITH METRAZOL

BY J. A. CUMMINS, M. D.

A total of 479 mentally-ill patients has received metrazol treatment to date of writing this report at the Ontario Hospital, Hamilton, Ont., Canada. Of these, 232 cases received curare with every one of their metrazol treatments. Curare has been administered on 3,057 occasions. In these experiences with curare, the drug has proved itself to be safe and very useful. The reactions to curare have been consistent, with a few interesting exceptions.

In the last 354 cases treated, radiographs were taken in every case, before and after treatment. All radiographs were read and reported on by Norman L. Easton, M. B.,\* and Joseph Sommers, M. D.† Prior to the use of curare, the incidence of compression fractures of the vertebrae was 14.8 per cent of the patients treated. In some, more than one vertebra was involved. With curare, the incidence has been reduced to 3.9 per cent. In the nine cases of compression occurring when curare was used, seven showed changes in one vertebra only; in the eighth case, two vertebrae were involved; and in the ninth case, three vertebrae were involved, but this patient was a female diabetic, 66 years of age. Furthermore, the degree of compression when curare was used was in every case very slight.

### CURARE DOSAGE AND TECHNIQUE

The curare used is that produced by Squibb, under the trade name of Intocostin; 20 mgs. of active curare are present in 1 cc. of Intocostin. One millogram of the active curare to two pounds body weight has been found adequate and safe, although 10 mgs. less than this should be given on the first occasion, especially to obese patients and to patients whose habits have been very sedentary. With this dose, some persons have paralysis of the neck muscles and are unable to raise their heads. Paralysis of the

\*From the department of psychiatry, division of research, Toronto Psychiatric Hospital, Dr. C. B. Farrar, director.

†From the department of radiology, Toronto General Hospital, Dr. G. E. Richards, director.

muscles of the neck first appeared to be the ideal sign that the optimum dose of curare had been reached. It, however, is not wise nor necessary to raise the dose to try to obtain this neck muscle paralysis. Early in the use of curare, the writer gradually increased the dose to 120 mgs. in a 150-pound patient without appreciable paralysis of the neck muscles. Marked paralysis of the muscles of respiration, however, did occur. This was successfully overcome by administering prostigmin, 2 cc., intravenously. Prostigmin is a spectacular and very reliable drug for this emergency. Artificial respiration has also been used in conjunction with prostigmin but does not compare in usefulness. For some time, attempts to paralyze the muscles of the neck by gradually raising the dose, caused varying degrees of respiratory embarrassment, all of which readily responded to the administration of prostigmin. Eventually it was concluded that 1 mg. of active curare for two pounds of body weight, was a safe and sufficient dose. The dose is administered slowly, within a period of one minute. Attempts to shorten this time have accentuated the undesirable reactions of the drug and have, therefore, been abandoned.

Curare, with hyperextension of the back by some means, is more effective than curare alone. At the Ontario Hospital, hyperextension with pillows and an ordinary hospital bed, have been found to be very satisfactory and convenient. No board support is used. The number of pillows used varies from three to five, depending on the size of the patient. For the past year, careful attention has been paid to the number of pillows used and their placement. Apparently as a result of this, only one case of compression of the vertebrae has occurred in the last 93 cases. This exception was the 66-year-old female with diabetes previously referred to. The compressions in this case would seem to bear out the observations that compressions are more prone to occur in elderly persons. The fact that three vertebrae were involved suggests that some degree of osteoporosis, aggravated by the diabetes, was present.

#### UNUSUAL REACTIONS

A few cases have reacted differently to curare than the general run. These reactions are of interest and for clarification are described separately.



*Case 1.* This patient was 32 years of age and had schizophrenia, catatonic type, of less than six months duration. Curare was administered on eight occasions. The first dose was  $3\frac{1}{4}$  cc., the second, third and fourth were  $3\frac{1}{2}$  cc. When the drug was administered on the third and fourth occasions, the patient behaved in a peculiar manner. He appeared terrified, became rigid and turned his head to one side. Flushing was present. The corneal reflex was normal. Metrazol was administered as usual and a convulsion followed. The postconvulsive period was uneventful except for some respiratory muscle paralysis which was more marked with the fourth convulsion. The fifth dose of curare was reduced to  $2\frac{3}{4}$  cc. and the patient's peculiar conduct and respiratory muscle paralysis did not occur. This dose of curare was continued until eight metrazol treatments had been administered. Following the eighth treatment, the patient's clinical picture suggested a compression, and a radiograph showed slight compression of the seventh dorsal vertebra. Metrazol treatment was discontinued. Improvement, which commenced with treatment, continued, and a few months later the patient returned home.

*Case 2.* This patient was 52, a case of manic-depressive psychosis, manic type, of a duration of approximately one year. This man weighed 160 pounds, and the dose of curare indicated was 4 cc. As usual,  $\frac{1}{2}$  cc. less was administered on the first occasion, the patient receiving  $3\frac{1}{2}$  cc. Slight respiratory embarrassment occurred postmetrazol, and the curare dose of  $3\frac{1}{2}$  cc. was maintained for the second and third treatments. With the third treatment, respiratory muscle paralysis became more marked and the curare dose was reduced to 3 cc. for the fourth treatment. This reduction was not sufficient; and on the occasion of the fifth treatment, the curare dose was reduced to  $2\frac{1}{2}$  cc. This dose was maintained until a total of 16 metrazol convulsions had been given. At this stage, clinical symptoms indicated a possible compression, which was proved by radiograph, and treatment was discontinued. In all there were 22 cases (about 10 per cent) for whom the curare dose had to be reduced  $\frac{1}{2}$  cc. (10 mgs.) or more. None were less tolerant than Case No. 2. The women were only slightly less tolerant to curare than the men.

*Case 3* was a very unusual one. This man received 3 cc. of curare for his first treatment and  $3\frac{1}{2}$  cc. with each treatment until a total of 18 treatments had been given. With his eighteenth treatment, he displayed severe respiratory embarrassment and was treated with prostigmin. His reaction to the prostigmin, although satisfactory, was slow. Since he had taken a curare dose of  $3\frac{1}{2}$  cc. for so many treatments without any difficulty, it was concluded that some accident of administration was responsible for this unusual reaction, and treatment was continued. With the nineteenth treatment, the reaction to curare was even more distressing, and the patient responded more slowly to prostigmin. Treatment was discontinued.

#### METRAZOL THERAPY AND DIABETES

Three patients were treated who had diabetes as well as their mental illness. The first was a 42-year-old schizophrenic patient, catatonic type, who recovered after five convulsions. It was her second admission. Her diabetes was controlled during treatments by five units of protamine zinc insulin, "Connaught Laboratory, Toronto," given before breakfast. The second, a 60-year-old patient, was diagnosed involutional psychosis, melancholy type. She received 14 metrazol convulsions and is now at home. Her diabetes was controlled with from five to 10 units of protamine zinc insulin, before breakfast. The third was the 66-year-old woman mentioned previously, diagnosis, manic-depressive, manic. She received two treatments and is still in the hospital. Her diabetes was controlled by five to 10 units of protamine zinc insulin. Treatment was discontinued because the three compression fractures of the vertebrae, which have been noted, occurred. On mornings of treatment, the administration of protamine zinc insulin was omitted until after treatment and when the patient had received food. This was considered a justifiable precaution since no patient receives breakfast on treatment mornings.

#### METRAZOL TECHNIQUE

The first 286 cases were treated twice a week and the last 193 persons three times a week, although some of the latter group, elderly persons, were able to tolerate treatment only twice a week.

TABLE 1. PATIENTS WHO RECEIVED TREATMENT TWICE A WEEK

	Recovered	Much improved	Improved	Negative	Total
Manic-depressive psychoses.....	33	14	3	5	55
Involuntional psychoses .....	9	9	2	5	25
Schizophrenic psychoses.....	20	23	27	29	99
Psychoneuroses .....	5	2	1	3	11
Psychoses with mental deficiency..	1	..	1	1	3
					193

TABLE 2. PATIENTS WHO RECEIVED TREATMENT THREE TIMES A WEEK

	Recovered	Much improved	Improved	Negative	Total
Manic-depressive psychoses.....	25	9	4	5	43
Involuntional psychoses .....	8	7	3	4	22
Schizophrenic psychoses .....	36	15	17	36	104
Psychoneuroses .....	7	4	3	3	17
Psychoses with mental deficiency..	4	1	..	2	7
					193

The 193 successive cases treated twice weekly immediately before the cases treated three times a week are compared in the tables.

From Tables 1 and 2, it would appear that the recovery rate is about 15 per cent higher in schizophrenic psychoses, when metrazol convulsions are administered three times a week. Additional information in regard to duration of the illness and the types of schizophrenia is submitted in Tables 3, 4 and 5 for comparative purposes.

TABLE 3. SCHIZOPHRENIC PATIENTS WHO RECEIVED TREATMENT TWICE A WEEK

	Recovered	Much improved	Improved	Negative	Total
Duration of psychoses					
Less than 6 months .....	15	13	7	7	42
6 to 18 months .....	5	10	11	8	34
More than 18 months .....	0	0	9	14	23
Total .....	20	23	27	29	99

## SCHIZOPHRENIC PATIENTS WHO RECEIVED TREATMENT THREE TIMES A WEEK

	Much				Total
	Recovered	improved	Improved	Negative	
Duration of psychoses					
Less than 6 months .....	27	11	10	11	59
6 to 18 months .....	7	3	5	9	24
More than 18 months .....	2	1	2	16	21
	—	—	—	—	—
Total .....	36	15	17	36	104

TABLE 5. TYPES OF SCHIZOPHRENIA

	Catatonic	Paranoid	Hebephrenic	Simple	Total
Treated twice a week .....	79	12	1	7	99
Treated three time a week .....	81	12	3	8	104

The tables on duration of illness also indicate a higher recovery rate in the more frequently treated cases. As seen in the final table, there is not any significant difference in the types of schizophrenia of these groups. While there are a great many factors that are uncontrollable in a study of this kind, it seems that these observations deserve some consideration. In administering treatments three times a week, no early increase in the recovery rate was noticed, but when 12 or more treatments had been given, some confusion, apparently due to metrazol, often appeared. After treatment was completed and after the metrazol confusion cleared, recovery also often occurred. The maximum number of treatments administered as a rule has been 20. As previously mentioned, older patients did not tolerate treatment three times a week. They developed this confusion earlier, more quickly, were not helped so much by it and were slower in recovering from it. Occasional attempts to develop this confusion to an extreme degree have never been found a successful method of treatment. Metrazol confusion has, to date, always been temporary. Other advantages of treatment administered three times a week are that the patients have seemed to mind their treatments less, and treatment is finished sooner and is thus more spectacular. This has a desirable psychological effect on the staff and on the patients. More hospital days are saved.

Apprehensiveness associated with receiving metrazol has been controlled by the administration of large doses which are more quickly effective. The initial dose for males is now 6 to 8 cc. of a 10 per cent solution of metrazol and 5 to 6 cc. for the females. Persons who do not have convulsions on these initial doses almost invariably show a serum blood bromide of more than 50 mgs., bromide medication having been prescribed before admission to hospital. The time from the injection until the convulsion occurs is noted; and if it exceeds 15 seconds, the metrazol dose is increased 2 cc. It seems that the length of time before the onset of the convulsion and after the injection of metrazol has much to do with apprehensiveness about treatment. Repeat-doses of metrazol, which are unusual under this system, are invariably followed by some fear of treatment on the part of the patient.

Restraint of the patient during the convulsion is minimized but nevertheless consistent. A gag is placed in the mouth, and the jaws are held firmly clasped upon it. This precaution has to date ensured against dislocation or fracture of the jaw. Mild effort only is used to keep the arms approximated to the chest wall, which forms a secure and natural splint for them. By this means dislocations and fractures associated with the arms, have not occurred. No other restraint of convulsive movements is employed.

#### SUMMARY AND CONCLUSIONS

After using curare on approximately 3,000 occasions, it is concluded to be an excellent drug for preventing complications associated with metrazol therapy. Only occasionally, patients are encountered who cannot tolerate the drug to an extent where it is useful. More rarely still is there an unpredictable reaction to the drug. The only difficulty encountered to date of this writing was the occasional occurrence of respiratory embarrassment, which in each incidence was readily and spectacularly controlled by intravenous administration of prostigmin.

Compressions of the vertebrae are even more unlikely to occur if the use of curare is supplemented by hyperextension of the spine.

Restraint of the patient during the convulsion is essential but should be limited.

The undesirable feature of fear associated with metrazol therapy may be largely overcome by proper attention to dosage.

Mild cases of diabetes are no contraindication to the use of metrazol.

In this series, schizophrenics treated three times a week showed a higher recovery rate than those treated twice a week.

No deaths have occurred with the use of these drugs, to date, at the Ontario Hospital.

#### ACKNOWLEDGMENT

The success of this work has in a large part been due to the support and encouragement of Dr. J. S. Stewart, medical superintendent, and his staff, and also to the help received from the hospital's consultant internist, Dr. Ambrose McGhie, of the McGregor Clinic.

Ontario Hospital  
Hamilton, Ont.



## ON THE RELATION OF HEARING TO SPACE AND MOTION

BY M. WALLENBERG, M. D.

In observing mental patients who are deaf or exhibit defective hearing, one gains the impression that in many of these cases, the deafness has greatly influenced the form of the psychosis; and on occasion, it would seem that deafness is one of the immediate causes. Blind persons as a rule seem to endure their defect more easily than the deaf, and one seldom finds that the circumstance of blindness culminates in psychosis or the elaboration of psychotic ideas.

From the psychoanalytical standpoint, we shall attempt first to investigate several factors governing human intercourse with the outside world by means of visual impressions, and second, to disclose additional data that are important for the vital significance of hearing in the formation of the environmental relationship. To this end, it is necessary to review the principal factors embodied in one's attitude to the outside world.

In "The Ego and the Id," Freud shows the importance of auditory perceptions for verbal images and discloses that they are one of the most important requisites for memory-residues and thinking. Isakower<sup>1</sup> points out that the auditory sphere of man is the last step in a phylogenetic development from the static organ of the crustaceans, and that it is of utmost importance for the regulation of our relations with the environment and for the building up of the super-ego. In the present paper, the discussion will deal with the hearing of sounds in general rather than with the perception of spoken language only.

Freud states that in infancy our first relationship consists only of a primary identification with outside objects. Furthermore, in all later relationships with the outside world, we find that to a certain extent this identification forms the basis of all object-relationships. Disturbances of the relation with the outside world frequently flow from a derangement in this identification; and a disturbance of the relationship to the outside world in deaf persons who develop psychoses may quite possibly be based upon such a disturbance of identification with the object.

Psychoanalytical research with regard to the manner in which different objects and events of the outside world are experienced and by which, for the individual, identification is facilitated, have shown that the element of movement plays a rôle of great importance. Freud demonstrates this with regard to the comical movement in his paper, "Wit and Its Relation to the Unconscious." He proves that we continuously identify ourselves unconsciously below the threshold of perception with the movement of objects which we notice in the outside world. Psychoanalytical examinations of the experience yielded by both plastic and representational arts and music have shown that an essential pleasure value resides in the motor-identification with the objects represented. This is likewise true of our feeling for nature.<sup>2</sup> Loss of perception of movement will, therefore, necessarily lead to loss of the possibility of identification and consequently to loss of positive relationships with the outside world.

Our attitude to identification with movement can be ambivalent. This is shown with respect to vision in optokinetic reflexes where the rudimentary identification mentioned plays a part. (This paper, representing, in effect, an effort to link psychological problems with anatomical and physiological factors, emphasis upon the former does not imply a disregard of the latter). The ambivalent attitude may be considered to be the psychological reason for the changing of the direction of gait deviation following optokinetic irritation. The present author showed this<sup>3</sup> in normal persons following exposure to Brunner's turning wheel—a large illuminated cylindrical container, of which the interior wall displays vertical black and white stripes, and which can be rotated at a certain speed. The subject stands within the rotating wheel and is instructed to gaze at the stripes. After a certain rotation time, the known labyrinthal reflexes (nystagmus, turning of body and of outstretched arms), appear.<sup>4</sup>

Vogel and others have drawn speculative attention to the theory that besides the pure reflex mechanisms, unconscious psychological factors may forcefully participate in the production of these phenomena. It would seem that this view obtains material confirmation from the fact that these reactions do not occur in those cases characterized by certain organic brain lesions, wherein the atten-

tion is disturbed; and also is confirmed, perhaps, by labyrinthal underirritability in schizophrenics—which might be attributed to the deterioration of their object-relationship and their resulting lack of attention.

After the person steps out of the turning wheel, a gait deviation in the direction opposite to the wheel rotation is noticeable. Then the gait changes into the direction identical with it, only to return, after a short time, to the first deviation. This constant alternation of the gait direction persists for a considerable period of time. The writer assumed that this pendulum rhythm is the expression of an ambivalent attitude toward the perceived object in the outside world. During the rotation, the person controls and resists complete identification with the moving object; this control and resistance prevail even when the movement of the cylinder ceases. The ensuing deviation in the corresponding direction manifests the counterpart of the subject's ambivalence to the moving object, namely, acceptance of the identification with the movement of the wheel; then refusal of the acceptance comes forth again, so that the alternating gait deviation results.

In a second experiment, the person standing in the cylinder is asked to look at an immobile rod which has been interposed between him and the turning cylinder. The cylinder will, after a short time, appear to stop, while, still later, the rod seems to be moving in the opposite direction to the cylinder's rotation. If the person is then asked to walk straight, his gait will again be in the direction opposite to that of the wheel; that means in the same direction as the apparent movement of the rod. In this case, however, no pendulum rhythm will be seen: the direction of the gait deviation will hardly change. In the first instance, the "ambivalence" of the gait deviation may have been brought about by the alternating of resistance against the movement and the identification with it. In the case of the interposed rod, the rod appears to move but does not do so in reality. This is, therefore, a subjective phenomenon created within the individuum, and no defense against the identification needs to be established.

The second experiment can be taken as an analogy to the psychosis: The moving but apparently stationary cylinder can be compared with the outside world which is gradually deprived of move-

ment and thereby of life. The rod, which is endowed by the person with unreal motion, represents, then, the disconnected idea which finally becomes the living pseudo-world for the patient. In psychosis, the resistance against this pseudo-world is much less than against the real world. Therefore, no ambivalence against it is shown. In the experiment, the cylinder first seems to stop, then the imaginary movement of the rod begins; this is parallel to the fact that probably most (if not all) schizophrenics have had the experience of a perishing of the world before the acute onsets of their psychoses.

These experiments show the importance of identification with moving objects in our relationship to the outside world by means of visual perceptions. All movements are movements in space; and perception of movement, therefore, implies establishment of spatial conception. The importance of vision for environment-testing and recognition of space is known, but usually one thinks somewhat less of the auditory sense in this regard. However, the phylogenesis and anatomically intimate connection of the sense organs for sound and for testing of body-environment relation show that hearing and recognition of movement and space are very closely related. (It is interesting in this connection to remember that the ancients believed in the relationship between sound and movement and expressed this in their idea of the music of the moving spheres.) As a matter of fact, a single sound has the faculty of mediating stereometric conceptions. It is not accidental that we speak of "altitude" (dependent on frequency of waves), "longitude" (dependent on duration), and "latitude" (dependent on number of overtones) of a sound. The feeling for the distance in which the sound is heard completes the requirement for spatial impression. The sound is also endowed with motion, and in our language we express much more commonly the movement of sounds than of visual impressions. This is perhaps due to the appreciably slower rate of transportation of acoustic impressions when compared with light, which allows us to perceive the motion.

The numerous acoustic sensations from the outside world which we continuously experience, consciously and unconsciously, thus help to give us the conception of movement in a three-dimensional space by their spatial character as well as by the slowness of their

transportation. In music, both space and motion are especially harmoniously perceived, and the identification with this "movement in unlimited space" may be complete and without ambivalence. A sudden complete silence creates, in many persons, fear and a feeling of uncertainty, since an important medium of affiliation with space and objects is abruptly withdrawn.

From the foregoing, we can therefore assume that for the deaf the recognition of space and motion is disturbed in the sense that the connection between objects and the individual has been cut, and the individual's ability to identify himself with them has been lost or at least has been made difficult. This would imply the fact that the world easily becomes motionless, or "static," for the deaf. The writer interviewed deaf nonpsychotic individuals, several of whom confirmed this assumption, and a very intelligent female patient who is suffering from a progressive nerve deafness showed surprising psychic relief when the lack of motion in her perception of the outside world was discussed. This patient said that this was exactly the center of the difficulty in her deafness—the frightful experience of the standstill of the world through the absence of auditory impressions.

A schizophrenic patient who showed partial insight blamed his deafness (which was in fact only fractional), as the cause of his break with reality. He said spontaneously, without being interrogated in this direction, "If you don't hear, you come to the *static*. You can't keep up with the ordinary *run* of things; then the doubt comes up." Incidentally, this patient had had a typical experience of a perishing of the world prior to onset of his psychosis.

Another schizophrenic female patient for years had the habit of constantly saying, "I can't hear you, I can't hear you," despite perfectly normal hearing sense. She said it automatically, with a silly grin, pointing at different persons around her, repeating the words in compulsive manner.

A 58-year-old white single female who had been suffering from an advanced catarrhal deafness since her twelfth year, suddenly developed persecutory ideas nine years ago and heard singing and frightening voices. She attacked her sister and later explained this by the fact that she felt somebody else was disguised as her sister. This patient admitted readily that she had the feeling of a "stand-



still of the world" which had changed for her because, "I feel lonesome, all by myself. The others can hear and enjoy it, and I can't." The content of her auditory hallucinations has greatly changed during the last years; at first they gave her aggressive commands as, for instance, "Stab in the heart." At present, they are merely wish-fulfilling in nature, they promise her that she will go home soon, etc. Incidentally, the idea of masquerading or of disguising of the environment was especially frequently found among the writer's deaf patients, though it is, of course, also not uncommon in other schizophrenics.

According to Freud, psychotic manifestations represent the attempt to reestablish relations with the outside world. It is of signal interest that this attempt is often made by means of the auditory system in the form of auditory hallucinations, a stumbling effort to regain connection with reality and to bring movement to the static environment through hearing.

The general predominance of acoustic hallucinations holds true also in the deaf psychotics the writer observed; other types of hallucination (especially visual ones) were not observed more often than in patients with normal hearing ability. Sometimes, in the deaf, the imaginary voices do not start before deafness is complete.

We have seen that for the deaf the world is not only silent but also without movement. From the analysis of dreams, we know that to the unconscious the concept of "silent and motionless" is identical with "dead." Thus, we see that, for the deaf, the world may become dead. Such an individual is deprived of one of the cardinal integrants through which unity with the environment is maintained; he cannot identify himself with an outside world which he experiences as dead. The consequence must be isolation and the building up of his own world, the psychosis.

The writer observed an interesting case of schizophrenia in a young man who was born a deaf-mute. He was of superior intelligence and had graduated from high school. He had learned lip-reading and could speak some, though his speech was difficult to understand. Before he entered high school, he had a private teacher. He said: "When I entered high school I began to realize the hardships of a deaf pupil in class lectures, consequently I became restless and had a feeling of failure."



At the age of 25 years, he developed persecutory and grandiose ideas and showed violence on occasion. His marked antagonism against his mother was probably due to the fact that he made her unconsciously responsible for his deafness; he thought that his "eardrums were punctured at birth." He often expressed the hope to hear one day.

During the first years of his mental ailment, it was possible to obtain ample information from him which he put down in writing. He thought he was of royal blood and an important political figure, subject to numerous plots and persecutions. He showed marked symbolism and believed in mind control which he called "ventriloquizing."

His latent homosexuality found frequent expression in ideas of being attacked with concealed weapons, as for instance, fountain pens which emanated death rays; or he thought one of his alleged persecutors "dilated his stomach as if he were pregnant."

He had falsifications of perception and misinterpreted what was said to him; but he also showed true auditory hallucinations. These were at times described as feeling-sensations, in the same way that actual noises frequently are perceived by deaf persons. Thus he felt steps of his persecutors behind him, their slamming of doors or "the shouts of the Bolsheviks from underneath his bedroom." At other times he actually heard voices giving him commands or warnings, or threatening him.

The power of the spoken word was expressed by this deaf-mute to an amazing degree: "I always dread to speak with my lips because my words cause some people to do queer acts." He occasionally struck his own lips until they bled.

Each of the persons around him represented to him an important political figure. He described how they confused him. His own words are: "They did the talking while *I would sit motionless and silent.*"

These words might indicate that the patient identified himself with his environment and became as motionless and silent as the world around him. In fact, later on he changed from a more paranoid type to that of a typical catatonic with long-lasting stupor. (The question arises if this mechanism is typical for all catatonic stupors—the world dies, thus becomes hostile; the ego defends it-

self through one of the known possibilities of ego defence, in this case identification with the aggressor, the dead world.)

Another way of identification with the dead world leads the deaf to deep depression and even to suicide. Fortunately, the majority of persons with a hearing defect discover the possibility of connection with the world through their other senses.

In most physical handicaps which lead to the elaboration of a psychosis, the onset of the psychosis may occur at any time. The same holds true for the psychosis precipitated by deafness. It may occur many years after the hearing defect develops. On the other hand, the degree of the hearing disability is not always in proportion to that of the psychosis. It is also known that relatively slight hearing disturbances may be greatly exaggerated by psychological influences; this holds true for both hysterical and psychotic cases.

#### SUMMARY

An attempt is made to explain certain psychological problems in deaf persons, with special reference to the occurrence of psychosis precipitated by deafness. This is done on the basis of Freud's discovery that identification is the prerequisite for all object-relationship and is to a great extent an identification with the object's movement. Perception of object-movement is, therefore, an important factor for our relationship with the outside world. It is brought about partially by the visual sense, and our reaction to it may be ambivalent. Another important factor for the perception of movement seems to be the auditory sense (independent of the vestibular apparatus). Hearing mediates spatial impressions, as well as movement through consciously and unconsciously perceived sounds.

Lack of hearing will lead to diminished perception of motion of the object-world, thus disturbing the possibility of identification. Unconsciously the concept of a "silent and motionless world" will be identical with that of a "dead world." This concept can lead to psychosis or depression unless substitution through other senses takes place. The question is raised as to whether auditory hallucinations are an attempt to bring subjective movement to the environment that has become static.

Manteno State Hospital  
Manteno, Ill.

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## CASE OF HYPOGLYCEMIA COMMITTED TO A MENTAL HOSPITAL

BY JOSEPHINE S. WELLS, M. D.

Before the discovery of insulin in 1922, hypoglycemia had been observed clinically in various conditions, for example in Addison's disease,<sup>1</sup> in pituitary tumor,<sup>2</sup> and in diabetics on low carbohydrate diets.<sup>3</sup> Since the isolation of insulin by Banting and Best, clinicians have become familiar with the symptom-complex resulting from a low blood sugar. In 1924, Seale Harris<sup>4</sup> described spontaneous hyperinsulinism, and since that time there have been many reports of such cases associated with pancreatic adenoma.<sup>5, 6</sup> Possible causes of hypoglycemia are: (1) excess insulin—by administration,<sup>7</sup> by overfunction of the pancreas as in adenoma,<sup>5, 6, 8</sup> hypertrophy,<sup>8</sup> carcinoma;<sup>8, 9</sup> (2) lack of opposing secretions—Addison's disease,<sup>1, 10</sup> Simmond's disease,<sup>11</sup> pituitary tumor;<sup>2</sup> (3) lack of glycogen—liver disease,<sup>12</sup> von Gierke's disease<sup>13</sup> (although hypoglycemia may be present in von Gierke's disease, the symptoms of it are rare; yet several cases of convulsion due to low blood sugar have been described in this condition); (4) nervous disorders.<sup>8</sup>

Normal blood sugar levels range between 80 and 120 mg./100 cc. The blood sugar level at which symptoms of hypoglycemia first appear is extremely variable and, as will be mentioned in the following, depends on several factors. In children this critical level is likely to be much lower than in adults.<sup>14</sup> In their early experiments with the injection of insulin into normal rabbits, Banting and Best produced convulsions when the blood sugar was about 0.045 per cent.<sup>15</sup> Wauchope<sup>16</sup> gives the general rule that "the normal blood sugar is about 0.100 per cent; symptoms of hypoglycemia appear at about 0.08 per cent; they become severe at 0.05 per cent or 0.045 per cent, and death may occur with the level in the neighborhood of 0.025 per cent." However, there are many exceptions to this statement and there is no fixed point at which symptoms or even death may appear.

The symptoms occurring with hypoglycemia are protean. Banting and Best found that their pancreatic extract produced, in rabbits, hunger, thirst, hyperexcitability, convulsions and coma.<sup>15</sup> In humans, the symptoms are much the same.<sup>8</sup> However, when protamine insulin is used—because of the slow fall in blood sugar—

there may be none of the usual early signs of hypoglycemia, and manifestations referable to the central nervous system may be the first to appear.<sup>8, 17</sup> Similarly, after the prolonged use of insulin, the type of reaction may change and the first symptoms of hypoglycemia may be nervous in origin, such as twitchings or convulsions.<sup>18</sup> The author has observed a long-standing diabetic who, when changed from regular to protamine insulin, no longer recognized the onset of shock as he had done previously; the first manifestations of hypoglycemia were disorientation and slowing of the mental processes; for these shocks, the patient had amnesia. As nearly as they can be outlined, the neuropsychiatric symptoms associated with a low blood sugar are as follows: mild—fatigue, restlessness, tremor, anxiety; moderately severe—resembling alcoholic intoxication, confabulation, hallucinations, disorientation, amnesia; severe—convulsions, mania, coma.

Adlersberg and Dolger,<sup>19</sup> in discussing the problems of hypoglycemic reactions in diabetes, state: "Despite the experience of physicians with the bizarre psychotic manifestations of hypoglycemia in their diabetic patients, . . . it is surprising that the medical profession has neglected reporting such cases." They report a case of a known diabetic whose recurrent nocturnal maniacal episodes so alarmed his family that they had him transferred to a psychiatric hospital. Fortunately, the nature of his difficulty was soon recognized. Graham and Womack<sup>6</sup> report a case of a young man who complained of twitchings of the legs after walking a few blocks, particularly on the way home from work; later he had petit mal attacks. A psychiatrist believed his condition was due to sexual repression, but hypnotism and psychoanalysis were of no avail. Five years after the onset of his symptoms, a blood sugar was done during an attack and found to be 25 mg./100 cc. After the removal of two pancreatic tumors, the patient recovered and had no more spells. Russell Wilder,<sup>20</sup> in reporting cases of hyperinsulinism, described a patient who had attacks of delirium, and who, two months before admission to Wilder's service, was in a straight jacket; at that time, his spells were considered by psychiatrists to be "wholly psychogenic in origin." Wilder commented, "It is probable that many of these cases are being dismissed with such diagnoses as

hysteria, or epilepsy, or schizophrenia, and that more cases of hyperinsulinism will come to light when blood sugar determinations are made with greater frequency."

#### CASE HISTORY

J. G., a 14-year-old negro girl, was admitted to the Central Islip State Hospital on March 16, 1942. Both parents were luetic, one sister and the father had tuberculosis. The patient was the youngest of eight children. She developed normally, but when she was six years of age, her mother noticed that the girl was lazy, lost weight, drank a great deal of water, and that when she wet the bed, the sheets became stiff. A local physician made the diagnosis of diabetes mellitus, and insulin was started. At the age of eight, J. G. was taken to a local hospital, in coma according to the mother. The report from the hospital gave no details except that at the time of admission her blood sugar was 40 mg./100 cc. The diagnoses made were scarlet fever and diabetes mellitus. Two other blood sugars, done on this admission, were 154 and 217 mg./100 cc. A tuberculin test at that time was negative. The girl was transferred to a sanatorium for an extended period; unfortunately this sanatorium has burned since, and no record of her could be obtained.

After discharge from this institution in 1938, the patient went to school and, in spite of at least two more hospital admissions, completed six grades by the age of 12. One of the hospital admissions was for acidosis, at which time her blood sugar was 363 mg./100 cc. She was discharged on a regimen of 28 units of protamine zinc insulin every morning and a diet of carbohydrate 175, protein 65, fat 65. The patient's older sister developed tuberculosis, and, in the routine X-raying of contacts, the patient was found to have minimal pulmonary tuberculosis. She was sent to a tuberculosis sanatorium in 1940. Prior to this, according to the mother, the girl had had no symptoms of mental disease. No such symptoms were noted in reports to the State hospital from social service agencies dealing with the family. The mother did state that if the child's breakfast was late, she might become very silly and be difficult to manage. This condition was quickly relieved by sugar.



At the tuberculosis sanatorium the diagnoses of adult exudative pulmonary tuberculosis and of diabetes mellitus were made. According to reports from this hospital, after several months there, the patient began having "disturbed spells in which she was disoriented, laughed, cried, talked at random, ran through the building screaming. She always resisted care during these episodes." Information regarding blood sugar levels during these episodes could not be obtained from this hospital. During the two months prior to her commitment to Central Islip, the attacks became more frequent, more severe, and of longer duration. They did not respond to carbohydrates. Finally she had an attack which lasted all day. A psychiatrist was called and the patient was committed to the mental hospital. Comments on the commitment paper were as follows: "The patient . . . is stilted, manneristic, inadequate, disconnected, silly, out of contact. Said 'I feel funny. I feel good. I scream and bite and yell. I don't know why.' . . . Patient assumes catatonic posture with opisthotonus and remains mute."

At the time of her arrival at the State hospital, J. G. was well-behaved, friendly and alert. She was put on the same regime that she had been on at the tuberculosis sanatorium, protamine zinc insulin, 68 units, every morning; regular insulin, 15 units before breakfast, 10 before lunch, and 10 before supper; diet, carbohydrate 180, protein 100, fat 50. Physical examination at the time of admission showed a normally developed, fairly well-nourished 14-year-old negro girl, blood pressure 110/70, moderate myopia, medium-sized tonsils, slight dullness at the apex of the right lung, no rales. An X-ray of the chest on the day of admission showed "an area of infiltration and fibrosis behind the right first rib." The diagnosis from this film was chronic pulmonary tuberculosis, apparently healed. An X-ray taken three weeks later showed no change. The Wassermann was negative; the urinalysis was negative except for occasional sugar; the sedimentation rate was 5 mm. after one hour.

A mental examination was done the morning after admission, about three hours after the patient's breakfast. At that time, she was pleasant but seemed to have marked blocks in her memory,

i. e., she didn't know where she was born, she didn't know the name of the hospital from which she had come; her calculation was very poor, and she could not write her last name. Her history of having finished six grades in school and previous contact with the patient led the examiner to suspect that she might be suffering from shock, although the patient was not sweating and her pulse was normal. It was recommended that she be fed at once, but on her return to the ward she became very excited and would not eat voluntarily. However, after being fed, she quieted down rapidly. It was decided to reduce the insulin and reregulate her. When another mental examination was done the following day, the patient answered all questions correctly, including those she had missed the first time. Orientation, recent and remote memory and general knowledge were good. She gave no evidence of hallucinations or delusions. She could remember nothing about the "spells" she had at the tuberculosis sanatorium except what she had been told by other people, and she remembered having been very sleepy during the mental examination the day before. She was fairly well-regulated on the same diet she had been getting, with protamine zinc insulin, 40 units, every morning, standard insulin, 20-0-10. A blood sugar, taken after this dosage of insulin and a breakfast of carbohydrate 30, was 95 mg. During two weeks of observation, the girl had no further "spells" and gave no indication of mental abnormality. Therefore, to prove that her attacks were hypoglycemic in origin, it was decided to give insulin and to withhold breakfast in an attempt to produce one. An hour after the insulin, the patient was silly, disoriented; she could not give her place of birth or the name of the President; she got out of bed and ran around and was very difficult to handle. A blood sugar taken at this time was 25 mg. After sweetened fruit juice, she was alert and well-oriented and remembered nothing of the episode. A few days later, due to an error, she received 60 instead of 40 units of protamine zinc insulin. At 3 o'clock the following morning, she became markedly excited, was confused and disoriented. Her blood sugar was less than 30 mg./100 cc.; but after fruit juice, the patient became normal.

The only other "spell" J. G. had during a month of observation was during her first walk. The girl had been directed to take lumps of sugar with her but had neglected to do so. After going a few blocks, the patient began to walk in a peculiar fashion, ran ahead of the others and fell. She became very agitated, fought, and screamed. It took several attendants to return her to the ward. While four nurses held her, a blood sugar was taken, and intravenous glucose was administered. After 10 grams of glucose, she was quiet, well-oriented, and could remember nothing since the time she fell while walking. The blood sugar taken at the height of this episode was 25 mg./100 cc.

On April 15, 1942, the patient was presented at a conference of the hospital staff and it was unanimously agreed that she was without psychosis and should be discharged. She was discharged two days later. A letter from her eight months after discharge stated that she was well and had had no further difficulties.

#### COMMENT

It seems worth remarking that, in a patient receiving insulin, hypoglycemia should always be suspected as the cause of any mental difficulty and that it cannot be ruled out without blood sugar studies during the attacks. When first admitted to the tuberculosis sanatorium, this patient may have required a higher dose of insulin than she needed later, as her health improved and she became more active physically. During a month of observation at the State hospital, only four episodes were noted which might suggest psychosis. In all but the first, blood sugars were taken and were less than 30 mg./100 cc.; and the girl received prompt relief from sugar. This seemed adequate proof of the etiology of her difficulties; and, since her behavior was not abnormal for a blood sugar of this level, it was decided that she was without psychosis.

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## BETTER CARE OF THE TUBERCULOUS MENTAL HOSPITAL PATIENT

BY H. J. WORTHING, M. D.

There has been, for a number of years, a constantly increasing effort for better diagnosis and treatment of the physical diseases in our State hospitals. Marked impetus to this movement was given by the report of the Special Committee which studied the medical work of the State hospitals.<sup>1</sup> Due largely to that study, our hospitals are now better equipped medically and surgically, and our sick wards resemble, and compare favorably with, those of the general hospitals. Yet tuberculosis remains a serious problem, accounting for a death rate among the mental hospital patients which is some four to six times the tuberculosis rate given by Rosenau<sup>2</sup> for the general population. In the report of the medical inspector to the State Hospital Commission, of the year 1926, the following statement is made: "Tuberculosis continues to be a common disease in mental hospitals and it is the cause of many deaths. At several of the hospitals facilities for caring for tuberculous patients are antiquated and inadequate, and it is recommended that the problem receive the active interest of your Commission."<sup>3</sup>

From the report of the State Hospital Commission,<sup>4</sup> it is learned that in 1926 there were 482 new cases of tuberculosis reported and that, of the communicable diseases, this number was exceeded only by pneumonia, all types, and by influenza, which occurred as an epidemic at four hospitals. From the same report, it is learned that 425, or 10.3 per cent, of all deaths were caused by tuberculosis. It is interesting to note that of the 425 deaths, 278, or 65.4 per cent, occurred in the group diagnosed dementia praecox; 42, or 9.8 per cent, in the manic-depressive group; and the remaining 105, or 24.7 per cent, scattered through the other groups.<sup>5</sup>

This may be compared with figures in the Fifty-fourth Annual Report of the Department of Mental Hygiene<sup>6</sup> for the year ending June 30, 1942. There it is shown that 44, or 6.5 per cent, of all deaths were caused by tuberculosis. Of the 433 deaths, 221, or 51.1 per cent, occurred in the group diagnosed dementia praecox; 25, or 5.7 per cent, in the manic-depressive group; while 187, or 43.2 per cent, occurred throughout the other groups. It is interesting to note that the death rate from tuberculosis had dropped, although

the report indicates there were 1,653 new cases of tuberculosis reported against 482 for 1926. This would seem to indicate that earlier diagnoses are being made and better case finding methods are in progress.

In order that the patients suffering with the disease may receive the most benefit from treatment and the other patients be adequately protected, it is certainly one of the first requisites that an early diagnosis be made. Among the psychotic, physical examination is often unsatisfactory with regard to careful examination of the lungs, owing to the poor cooperation of the patient. This has been emphasized by Trippeer.<sup>7</sup> For this reason, an early case of tuberculosis may be overlooked until it has become well-advanced and the chances of arrest are lessened by such delay. To overcome this condition, every aid which we possess should be used. It is, therefore, well with every new admission, to take the temperature at least morning and evening, for a period; to keep a systematic weight chart, weight being recorded weekly, if possible; to make an examination of sputum, if there be any, or of aspirated gastric contents; and the accurate observation and recording of subjective symptoms, such as cough, expectoration, hemoptysis, pain, voice changes, dyspnoea, sweating, loss of weight, anorexia and headaches.

To these observations and examinations, there should be added a careful Roentgenographic examination of each new admission. This examination could be fluoroscopic, as suggested by Dr. Klopp.<sup>8</sup> The writer, however, would much prefer the making of Roentgenograms and, if possible, the use of stereoscopic plates. The Roentgenograms have the advantage of forming a permanent record; they may be studied at leisure and may be referred to later for comparison. The stereoscopic plates have marked advantages over the single plate, as they are, on the whole, more accurate and less liable to misinterpretation, because in these the superimposed shadows are separated, and their relative value in intensity is more readily demonstrated. This is important, as there is a tendency to overread plates of the chest, i. e., to see in them shadows which are of no pathological significance. For this reason a careful attempt must be made to correlate the X-ray findings with the physical. The erythrocytic sedimentation test is of help.<sup>9</sup>



There should also be made at each hospital a systematic yearly (some recommend semi-annual) physical examination of each patient in the hospital, and if any signs are noted, the X-ray examination, as stated before, should be done. By this method, we should be able to find all cases of tuberculosis in new admissions and all cases developing during the year in the hospital. Because of the overcrowded conditions in our hospitals, the menace to other patients of an undiagnosed case of tuberculosis is considerably enhanced. We cannot at once correct the overcrowding, but we can endeavor to make more early diagnoses.

It is the earnest desire of those who have to do with the care of the psychotic that their patients receive the best treatment possible, both physical and mental; this matter is considered frequently and the question is asked: "How can we improve this treatment?" Let us apply this question to tuberculosis and consider it briefly. When a citizen of a community develops tuberculosis, he is usually advised to go to a sanatorium where a specialty is made of the treatment of that disease, and a sanatorium in a suitable location is considered. Would it not be possible and advantageous to send the patients from the State hospitals to a sanatorium in connection with one of these, where a specialty is made of the treatment of tuberculosis? For instance, at Harlem Valley State Hospital, the elevation is considerably above that of New York City, the climate is dry and there are few fogs. There are hills to the east of the main building on which a sanatorium could be constructed, giving protection from the winds; southern exposure and sunshine and fresh air could be had in abundance. Here, the tuberculous patients could easily be sent from the metropolitan district and perhaps from Hudson River State Hospital and Middletown State Homeopathic Hospital. Another sanatorium to serve the other hospitals might be located at Marcy, Willard or Gowanda. Let us consider some of the advantages and disadvantages of such a plan:

#### ADVANTAGES

(1) *Better medical care.* The medical director of such an organization would become an expert in the treatment of tuberculosis and could better instruct the younger members of the staff assigned to the service. The Roentgenologist, by the larger number of cases

to work with, would also become an authority on his subject, as is the case at the New York State Tuberculosis Hospitals, Trudeau Sanatorium, J. N. Adams Memorial Hospital, and others. The patients would benefit from this more scientific handling of the disease, and one would expect an earlier arrest of the condition. The psychiatric work would be under the direction of the clinical director of the hospital to which the sanatorium is attached.

(2) *Improved nursing care.* The nursing care of the patients would be improved because the nurses would see many more cases in a given length of time and would be under the constant instruction of those entirely familiar with the disease.

(3) *Better equipment.* The building would be of the most modern, scientific construction and have the latest equipment, similar to that described in outline by Dr. S. W. Hamilton and Mr. T. B. Kidner.<sup>10</sup>

(4) *More fresh air and sunshine.* Because of being located away from a city, about which the air is polluted with irritating gasses, smoke and dews, patients would cough less, and the ultra-violet rays of the sun would be less absorbed and deflected by these foreign matters in the air. Pure fresh air and an abundance of sunshine are important factors. These are more important than altitude.<sup>11</sup>

(5) *Better recreation.* Amusements could be brought to the patients, as there would be a sufficient number in the group to provide for a chief occupational therapist and an instructor of physical culture. Their work being limited to the tuberculous, they would develop a more suitable program of entertainment, occupation and recreation. This program would require more individualization than one dealing with simply psychiatric patients, because both the mental and the physical aspects must be carefully considered.

(6) *Improved adjustment to institution.* Many patients, being surrounded with the sanatorium atmosphere, would adjust to the life and learn to take proper care of themselves, just as normal persons afflicted with this disease learn this lesson in sanatoria.

(7) *Better adjustment on recovery.* Patients recovering from their psychoses and taught to care for themselves would be in condition to take up their lives in the community again.

(8) *Better surgical treatment available.* In specialized organizations it would be possible to maintain an adequate surgical staff to give the most modern surgical treatments.

#### DISADVANTAGES

(1) *High cost.* Some might criticize these plans because the expense of such an undertaking would be great. Gradually, however, many of the buildings used for tuberculous patients must be renewed, and they can be built at one location at approximately the same cost as at another. The proposed unit may not be completed at one time; but after the working portion is erected, other buildings may be added as money becomes available. Those buildings in which tuberculous patients are now housed, which are in good condition, but not modern, could be thoroughly disinfected,<sup>12</sup> cleaned and reconditioned, and would provide additional beds for nontuberculous patients. There would necessarily be additional transportation expense. The benefit to the patients, however, would be sufficient to justify this.

(2) *Lessened accessibility.* The distance of tuberculous patients from their relatives and the inconvenience and expense to relatives in making visits would undoubtedly cause some complaint. This condition could be corrected by showing relatives that the patients were to be benefited by such special treatment.

(3) *Greater problem of personnel.* There might be difficulty in obtaining attendants and nurses. This could be overcome by having nurses assigned from the hospital which the sanatorium serves. Pupil nurses would receive a portion of their training there.

#### CONCLUSION

It would seem that the advantages of such a sanatorium outweigh the disadvantages; and, therefore, this brief discussion is presented with the hope of adding another helpful thought in relation to the work already being done with this group of patients.

Pilgrim State Hospital  
West Brentwood, N. Y.

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## TENSION STATES IN THE NEUROSES

BY LEWIS R. WOLBERG, M. D.

Human needs involve not merely gratification of the creature comforts of life, but also strivings for security, for self-assertion, for companionship, for love, for satisfactions in work and play and for the attainment of individual development and creativeness in accordance with one's resources and aptitudes.

The mentally healthy person possesses a personality that regulates in a facile way his relationships with his fellow creatures. He is capable of satisfying his needs by manipulating his environment in a purposeful manner in accordance with the mores, traditions and institutions of his culture. The neurotic individual, on the other hand, possesses a personality incapable of regulating efficiently his relationships with people. He is consequently handicapped in his search for pleasure. He may sense a state of inner restlessness and perhaps be aware of a driving force for relief within, but his techniques of adjustment are so defective that he is unable to gain his objectives. The very world toward which he reaches for gratification is to him so menacing that he exhausts his energies building defenses against the world rather than in the pursuit of normal appetites and goals.

An analysis of the dynamics of the neurotic adjustment often reveals that the individual is diverted from his goals by danger that constantly shadows his basic strivings and impulses. This danger involves fear of the loss of love or an outright expectation of injury or punishment from those upon whom he is dependent as a child—and, as an adult, from authoritative persons who take over the symbolic qualities of the parents. More significantly, the fears are incorporated within his own system of conscience in the form of a compulsive set of moral restraints which supervise his impulses with relentless vigilance and tyranny.

The core of these unfortunate conditionings lies in the child's earliest relationships with the parents. Where his demands for love and security have been ungratified, where he has been undermined and crushed in his struggle for independence, he will be filled with catastrophic feelings of helplessness, with convictions that he is unloved and unlovable, with ideas of his own worthlessness and

contemptibility.<sup>1</sup> Out of such feelings, arise strivings to avert helplessness and to defend himself against a potentially menacing world. There are innumerable subterfuges that the individual can pursue in his quest for safety, and these will be influenced by the specific experiences to which he has been exposed. He may, for instance, find that he can best get along with people by assuming a passive compliant rôle, ingratiating himself and yielding his assertiveness in the hope that he will be loved. His life may be oriented around a passionate tendency to prevail on stronger individuals to have mercy on him, persuading them by suppressing his own aggressive claims on life. He may, under some circumstances, feel that he can best maintain his security and integrity by attitudes of aggression and by dominating others. Where the child has been subjected to especially harsh and rejecting parents, he may look upon all persons as harbingers of destruction and strive to isolate himself from the world by pursuing a compulsive drive for independence, aimed at maintaining a chasm between himself and others. There are many other techniques, such as perfectionism, power strivings, compulsive modesty, inordinate needs for prestige and status, acquisitiveness, needs for self-punishment, self-glamour and self-aggrandizement.<sup>2</sup> These often reflect the same trends which are sanctioned by the individual's culture, but upon analysis will always be found to deviate in intensity from the strivings pursued by the average person. It is on the bedrock of such subterfuges that the framework of neurosis is laid, for the distorted character drives tend to isolate the individual from others and to divert his goals from the satisfaction of vital biological needs to the escape from his own helplessness and his fears of the world.

Life for the neurotic becomes a fruitless quest for spurious goals and an insatiable craving for vicarious satisfactions such as for power, masochistic surrender, inordinate dependency, grandiose ambitiousness or detachment. Maladjustive as they seem, these compulsive drives serve an illusory security function, and the neurotic person becomes so involved with the subjective values of his drives that he is diverted from goals considered by normal persons as consonant with their best interests. Indeed, the normal pursuits of life often become vapid and meaningless, and little feeling



may exist for the basic appetites as for food, sleep, sex, recreation and companionship, a condition that some observers have described as "anhedonia."<sup>3</sup>

Failure to gratify biological needs results in a disturbance in the organic equilibrium of the body, causing a generalized state of tension with powerful excitations that penetrate the nervous system. To a large extent, this mechanism serves a physiological purpose by organizing the physical and psychological resources of the individual to restore homeostasis. In the normal person, behavior patterns of an adaptive nature occur. In the neurotic individual, techniques of adjustment are so disorganized and ineffective that altered homeostasis and tension persist. Furthermore the vicarious needs created by character distortions are usually impossible of complete fulfillment because of internal contradictions and because they make such unfair demands on the person and on those with whom he associates. In the long run, insecurity is enhanced and self-esteem vitiated. Compulsive character drives, maladjustive as they prove and impossible as they are of fulfillment, become so essential to the security of the neurotic that any block to their achievement serves to generate tension. The neurotic is consequently a tense person, and chemical and electrical studies clearly demonstrate the existent state of organic imbalance in the neuroses.<sup>4, 5</sup>

Symptoms of tension manifest themselves on different levels of nerve integration—visceral, somatic and psychic. The visceral symptoms of tension result from excitations reaching the hypothalamus and subthalamus, producing a massive autonomic stimulation. Changes occur in the smooth musculature and in glands throughout the body. Furthermore, a lowered threshold to sensory stimuli develops, and there is a generalized increase of reflex activity. Autonomic manifestations continue as long as the state of tension lasts and disappear only when homeostasis is reestablished. Because the neurotic is so handicapped in dissipating his tension, his viscera may be in a perpetual state of abnormal stimulation. Spasm of the cardiac and pyloric portions of the stomach, intestinal spasms, hyperchlorhydria, and constipation or diarrhea are common phenomena. Changes in the tonus of vessels affect the blood distribution throughout the body. Heart symptoms include palpi-

tations, tachycardia, extrasystoles and contraction of the coronary arteries. Spasm of the respiratory apparatus accounts for breathing difficulties and chest pain. There may occur an alteration of secretions of the various organs, urinary frequency or retention, impotency, frigidity, dysmenorrhea and other menstrual disorders. The general irritability and oversensitivity to stimuli are registered as paresthesias, hyperesthesias and defects of the higher sensory organs involving such functions as vision and hearing.

When excitations reach centers of somatic response, there results an increased tonus of the striated musculature. This is, of course, of advantage in facilitating motor reactions in the event of emergencies. In prolonged states of tension, however, there occur muscle spasms and ties which interfere with proper functioning. For example, spasm of the diaphragm, facial muscles and muscles of articulation may produce difficulties in speech like stammering and stuttering. Jacobson considers the somatic component of the tension state the most significant phenomenon of psychoneurosis. Neurosis is associated with what he calls habitual "neuromuscular hypertension."<sup>5</sup> Accurate electrical measurement of skeletal muscles and peripheral nerves shows that the action-potentials of persons in "nervous excitement" are very high, even in a resting state. Strains of the joints and ligaments are inevitable. It is understandable that muscle strains and spasms contribute materially to the fatigue and exhaustion so commonly found in neurotics.

Tension exerts its effects on the psychic apparatus, probably by way of the cortico-hypothalamic pathways. Stimulation of the cortex is of survival value in the higher animals, for the complexity of the environment necessitates elaborate adjustments which can be organized only by the participation of the higher psychic centers. The cortical penetration of excitation in man incites the ego to mobilize its intellectual, conative and affective resources for purposes of adaptation. Behavior patterns, in the form of conditioned techniques arising from the past experiences of the individual, are consequently whipped into action to fulfill needs which are essential to the restoration of homeostasis.<sup>6</sup> It must be emphasized that the psychic mediation of tension can occur as an unconscious experience, although the penetration of tension into the field

of awareness permits the individual to integrate activities of the most expedient and purposeful nature.

Excitations from tension penetrating the psyche produce constellations of ideas, memories and fantasies associated with the state of unrest. A wide variety of symbolic material may be used, depending upon individual experiences and upon the degree of repression that exists in relation to the specific needs that produce tension. In many cases the person may be unaware of the sources of his tension because acknowledging them is dangerous. Where sources of tension are repressed, the material chosen to represent the individual's inner restlessness may be such material of everyday life as explains best his emotional imbalance. For instance, he may attempt to attribute his tension to disquieting conditions in his environment such as a state of world unrest, or the fact that he is discriminated against by his boss or disliked by his mother-in-law. This is the phenomenon of rationalization and is a secondary construction on the part of the psyche to provide objectivity for internal distress. The material used to symbolize tension will, of course, depend upon the actual state of consciousness. During sleep, the language of the dream state will differ materially from the waking state and will resemble primitive representations such as the child uses during early phases of ego growth. Where the individual has an inkling of the sources of his tension, the symbolic material will more closely approach the actual cause. Even where he is unaware, he will through slips of speech or through circuitous language-associations permit a trained observer to understand the basis for his organic unrest. This is the technique used in free association during psychoanalysis. One of the purposes of psychoanalysis is to render conscious such unconscious derivatives, in order to help the individual make more purposeful attempts at adaptation.

Thus, where the ego is menaced by biological needs, it may under the impact of anxiety inhibit the very penetration of tension into consciousness. Tension will therefore exist without psychic representation, and widespread autonomic disturbances may occur with little subjective feeling of inner stress. One of the consequences of this repression is that the higher psychic apparatus is virtually obliterated as an adaptive tool, and the drainage of ten-

sion takes place almost exclusively through autonomic pathways.

The constant bombardment of the internal organs with stimuli results in local spasms, ischemias and altered glandular secretions. One might speculate that in extremely repressed and inhibited individuals tension states will continue to a point where visceral changes of an irreversible nature develop in the form of psychosomatic illness. This would be the case especially in organ weakness through constitutional predisposition. Only when organic pathology has become advanced, is the person aware that anything is wrong, and then he will be more preoccupied with his physical symptoms than with his tension. The ego system, reinforced by too strong repressions, may therefore be a real detriment to physical health, and considerable psychotherapeutic work will be necessary before barriers to the psychic mediation of tension are dissolved. Such dissolution is absolutely necessary to relieve the strain on the visceral and somatic organs produced by the tension that constantly regenerates itself.

A lack of awareness of tension, however, is not nearly so common in the neuroses as is the opposite condition of undue sensitivity to inner distress. Most patients, though ignorant of the causes of their suffering, are painfully conscious of their discomfiture. In these cases, there is often associated a lowered tolerance to all kinds of frustration. Unlike the average individual who is able to stand many deprivations provided they are not unfair, and provided they are shared and are compensated for by substitutive pleasures or by the promise of future gratifications, many neurotic persons seem never to have developed a system of inhibitions capable of handling frustration. In fact, frustration of the slightest sort becomes an intolerable experience, arousing in some patients the feeling that they are unloved, contemptible and helpless.

On the basis of an inadequate inhibitory system the psyche responds to the slightest excitations stirred up by tension. We might postulate that the hypothalamus sends massive discharges through the cortico-hypothalamic pathways, flooding the cortex with stimuli which would not penetrate the barriers of an adequate repressive mechanism. It is perhaps for this reason that the neurotic is so overly sensitive to variations in his organic equilibrium and is so conscious of the slightest changes within himself. Hyper-

esthesia, paresthesias, muscular aches and pains, dizziness, roaring of his ears, pounding of his heart and the tiniest evidences of fatigue occupy the field of attention.

A lowered threshold to internal sensations may account for the constant preoccupation of the neurotic with his viscera. One must remember that his visceral and somatic organs are actually in a state of abnormal stimulation because of the tension that is ever present. The neurotic individual is so engrossed with the state of his organs that he may never do anything about the real causes of his tension. The need to provide an objective reason for his symptoms will often send him out in search of a doctor who will confirm his own pathological convictions and who will be able to cause his difficulties to vanish with a few magical pills or hypodermic injections.

Sometimes the patient will unconsciously utilize his hypochondria as an escape from the responsibilities of life, dramatizing his symptoms as the chief reason for his helplessness and failure and his inability to do anything about himself. He may overtly capitalize on his suffering and will resent any implication that he is not so ill as he imagines. Under certain conditions, he may concentrate on a specific organ or function which unconsciously symbolizes his conflict, and he may present objective manifestations of alterations in function. Such is the situation in conversion hysteria where the physical symptom represents the gratification of a forbidden impulse as well as a defense against the impulse.

In some cases unconscious fears of death or mutilation add anxiety to the picture and cause the individual to dread the discovery within himself of a "terrible" disease. He will look for syphilitic sores on his penis or in his mouth; he will explore the slightest lump or lesion for evidences of cancer; he will feel his pulse and take his temperature; and when he is overwhelmed by tension, he will notify everyone in reach. Disease here is equated with destruction, and the patient will be terrified by the tumultuous condition of his viscera.

The inability to tolerate frustration or discomfort is, of course, in itself not an adequate criterion for the diagnosis of a neurosis, since there are some neurotic character disturbances which are oriented around the need to suffer and to tolerate punishment far



above the endurance of the average person. Such is the case in the ascetic or masochistic character disorders. Nevertheless, all the physical manifestations of tension may exist even though the individual does not give voice to his distress, or even though he utilizes his suffering as a means of pleading for help, love and reassurance.

As is well known, a great many persons seem to maintain a fairly adequate relationship to life in spite of their neuroses. Here, the ego structure is sufficiently strong to permit the mobilization of enough resources to gratify, after a fashion, the more important biological needs as well as the compulsive neurotic drives. It may be possible for the individual to function, though not to the degree of efficiency or satisfaction that would be possible were he normally integrated. Tension states will exist, nevertheless, and, when they become overwhelming, they may be dissipated temporarily by such variegated devices as by drowning oneself in work or play, by constant bouts of pleasure-seeking, by plunging oneself violently into sex or extroverted social activities, by indulging in research, sports or hobbies, or by resorting to alcohol or drugs.

Permanent relief of tension can occur only by liberating the individual from his neurotic adjustment, rendering him capable of expressing his needs without recourse to strivings that isolate him from the world and from his own impulses.

#### SUMMARY

Perhaps the most universal symptom in neurosis is the existence of a diffuse state of tension. This may occur as a conscious subjective experience, but sometimes the patient is unaware of its existence. Tension is a manifestation of a disturbed physiological balance of the body. The neurotic individual is subject to more tension than the average person, because, as experiments have shown, he finds it harder to maintain himself in a condition of organic equilibrium.

To a large extent, tension is a purposeful mechanism mobilizing through the autonomic and central nervous systems the resources of the organism to aid it in the pursuit of its biological goals. In mentally healthy persons, tension sets into motion goal-directed strivings which eventually bring about a propitiation of needs and a restoration of homeostasis. This is the case where the person as



a child has developed techniques of adjustment in his early relationships with his parents which permit him to indulge his impulses and to gain vital satisfactions without fear of injury or the loss of love. Energy developing from biological needs is translated into purposeful behavior utilizing the conative, affective and cognitive resources of the individual. The neurotic individual, on the other hand, is so filled with feelings of helplessness and with fears of the world that he is diverted from goals accepted by normal persons as consonant with their best interests. Instead of gratifying his biological impulses, he is in a frenzied pursuit of spurious goals of a more or less aimless nature. These serve a vicarious safety function and eventually become invested with inordinate subjective values. Often, it is impossible to fulfill the neurotic goals, because they make unreasonable demands on the individual and serve to create rather than to alleviate tension. The entire tension-allaying mechanism in the neurotic is so elaborate and so faulty that he is perpetually in a state of excitation.

Symptoms of tension at a visceral level are produced by a massive autonomic stimulation affecting various organs and glands of the body. Somatic stimulation produces an increased tonus and spasticity of the skeletal musculature. The effects on the psychic apparatus depend on the strength of the repressive system. There are some neurotics who are unable to tolerate the slightest manifestations of inner discomfort, probably because of a defective inhibitory mechanism. Paresthesias, hyperesthesias, somatic pain and hypochondriacal phenomena of varied sorts are common symptoms. On the other hand, there are certain neurotic conditions which are characterized by such an inordinately severe repressive system as virtually to remove tension from awareness. As a result the patient will be handicapped in his adjustment to stress, and he will be in a perpetual condition of organic unrest, his tension draining itself solely through autonomic channels. Widespread physiological changes may be wrought by the incessant bombardment of the viscera with stimuli, and muscle spasms, ischemias and disturbed glandular secretions will eventually produce alterations in function. Pathology of an irreversible nature is often the end result, and organic somatic disease may complicate the symptom picture.

Treatment in psychoneurosis involves a change in the character structure, with the development of new techniques in interpersonal relationships permitting a satisfactory fulfillment of needs. Under these circumstances, tension will stimulate adaptive patterns of adjustment whenever the organic equilibrium of the body is threatened. Treatment, furthermore, involves a rehabilitation in the motives and life goals away from neurotic strivings which serve an illusory security function toward those in line with fundamental biological and social needs of the individual.

Kings Park State Hospital  
Kings Park, N. Y.

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# PERFORMANCES OF PROBLEM CHILDREN ON THE WECHSLER-BELLEVUE INTELLIGENCE SCALES AND THE REVISED STANFORD-BINET

BY ARTHUR WEIDER, JOSEPH LEVI AND FRANK RISCH

The advent of a newly-developed psychometric instrument to the clinical field is usually followed by numerous investigations. Many studies concern an evaluation of the new tool, *per se*, while others attempt to analyze the test in the light of an older, tried yardstick. Thus, the clinical horizon is dotted with comparative studies that point out the relative merits of various psychometric devices.<sup>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</sup> The relationship between the findings of any two tests under scrutiny oftentimes yields valuable information and, one dares say, the understanding and ultimate application of either test is similarly enhanced. The present study is another such investigation, primarily designed to present data that might prove useful in the psychological clinic.

## METHOD

The two tests studied in this presentation are the Wechsler-Bellevue Intelligence Scales<sup>13</sup> and the Revised Stanford-Binet, Form L.<sup>14</sup> Both tests were given to 61 white children who ranged in age from eight years, zero months, to 16 years, one month, with 12 years, three months, the mean age for the group. All of the subjects were studied in the Children and Adolescent Observation Ward of the Psychiatric Division of Bellevue Hospital. The subjects were referred to the hospital because of various behavior and personality disorders; all were examined by one of the writers (J. L.). There were 13 girls and 48 boys. The tests were given in two sessions, usually on the morning and afternoon of the same day.

## RESULTS

The coefficient of correlation between the Stanford-Binet I. Q. and the Bellevue Full Scale I. Q. was found to be  $.81 \pm .03$ . This figure is in close agreement with the one quoted by Wechsler ( $.82 \pm .026$ )

for 75 children between the ages of 14 and 16 years. In a very similar study<sup>3</sup> to the present one, a somewhat higher correlation for adult psychiatric patients was found; and it was concluded "... whether one tends to consider the 'true' coefficient to be in the '80's' or in the low '90's,' it is evident that a high degree of relationship exists between the tests and that they are differentiating these individuals in a very similar way." In the present test, the coefficient of correlation between the Stanford-Binet I. Q. and the Bellevue Verbal Scale I. Q. was found to be  $.87 \pm .02$ ; while the correlation between the Binet I. Q. and the Bellevue Performance Scale I. Q. was  $.56 \pm .06$ .

TABLE 1. BINET AND BELLEVUE SCORES

Test	Mean I. Q.	Standard deviation	Range of I. Q.'s
Stanford-Binet .....	86	15.6	64 (58-122)
Full Bellevue Scale .....	87	16.6	69 (57-126)
Bellevue Verbal Scale .....	82	16.1	62 (58-120)
Bellevue Performance Scale .....	94	17.5	86 (52-138)

In Table 1, are given the mean I. Q. scores, the standard deviations and ranges of scores of the group for the Stanford-Binet, the Bellevue Full Scale, the Bellevue Verbal Scale and the Bellevue Performance Scale. It will be noted that the mean scores, the standard deviations and the range of scores are quite similar for all tests with the exception of the Bellevue Performance Scale. Halpern,<sup>6</sup> studying a group of 37 children between the ages of 10 and 14 years, of a slightly lower general intelligence level, also finds a higher Bellevue Performance mean I. Q. (87.50). Although not so high as the one cited here for this scale, she found a difference of approximately 13 points between the Performance and the Verbal Scale means, a result which is almost identical with that shown in Table 1. There is little doubt that as a group, children with delinquent and asocial character traits and usually those manifesting various behavior problems, do well on tests requiring performance and manual ability as opposed to tests of a verbal nature.

TABLE 2. TEST SCORES OF SUBJECTS MAKING THE HIGHEST AND LOWEST BINET I. Q. SCORES

Subject	High Binet I. Q.'s		Subject	Low Binet I. Q.'s	
	Binet I. Q.	Bellevue I. Q.		Binet I. Q.	Bellevue I. Q.
A .....	122	116	K .....	58	59
B .....	120	116	L .....	58	75
C .....	119	105	M .....	61	61
D .....	114	101	N .....	63	65

In Table 2, are given the Binet I. Q. scores of the children who made the four highest and the four lowest scores. As was pointed out in the Benton, Weider, Blauvelt paper on adults, so it appears here, but in a less striking fashion, that the subjects with low I. Q.'s obtain somewhat higher I. Q.'s on the Bellevue than on the Binet and that the subjects with high I. Q.'s achieve lower scores on the Bellevue than on the Binet. Halpern's data lead her to the same conclusion.

It is fairly obvious that an I. Q. represents a position assigned to an individual, which places him in relation to the other individuals of the group with whom he is being compared. Although the scores that he receives on two intelligence tests are different, his "relative position," or "the positional significance may indicate the same degree of deviation from their respective averages."<sup>13</sup> Since this is as true of children as it is of adults, divergencies between Binet and Bellevue scores should not be interpreted to mean that actual differences in capacity exist, when these differences are due primarily to statistical methods employed in test construction. Therefore, the need for a procedure whereby such scores will be equated is apparent. The method which proved useful for adults with these two scales<sup>3</sup> has been adopted for this study. Table 3 presents the provisional "equivalent scores" based upon the regression equation for the prediction of the Bellevue I. Q. score from the Binet I. Q. for this special group. Furthermore, the writers feel that it may be useful to approximate the Bellevue or the Binet score when time is available for the administration of one of these tests only. Lastly, it is felt that such a table will provide for greater lucidity in bringing forth the existing relationships of the test scores.

TABLE 3. EQUIVALENT BINET AND BELLEVUE FULL SCALE I. Q. SCORES FOR PROBLEM CHILDREN'S GROUP

P. E. = 6.6 I. Q. points (est. Bellevue I. Q.)					
Binet I. Q.	Bellevue I. Q.	Binet I. Q.	Bellevue I. Q.	Binet I. Q.	Bellevue I. Q.
40	47	78	80	116	113
42	49	80	82	118	114
44	51	82	84	120	116
46	53	84	85	122	118
48	54	86	87	124	120
50	56	88	89	126	121
52	58	90	91	128	123
54	59	92	92	130	125
56	61	94	94	132	127
58	63	96	96	134	128
60	65	98	97	136	130
62	66	100	99	138	132
64	68	102	101	140	133
66	70	104	102	142	135
68	71	106	104	144	137
70	73	108	106	146	139
72	75	110	108	148	140
74	77	112	109	150	142
76	78	114	111	..	..

The regression equation for predicting the Bellevue I. Q. score from the Binet I. Q. score is:  $Y = .86X + 13$ , where Y is the Bellevue I. Q. score and X is the Binet I. Q. score.

### DISCUSSION

Undoubtedly some criticism will be lodged against the practice of using the Bellevue Scales for children. For many workers, the Bellevue has become indispensable for testing adult intelligence; while for some, the erroneous belief that these scales were primarily devised for adults has blinded them to their other uses. Actually, the norms include 670 cases between the ages of seven and 16 referred to as children (Ref. 13, page 105). Still others say that Wechsler intended to have the scales used solely for adults, since the vast majority of cases upon which the norms are based, are adults. To this argument, the writers need only point out that for the past two decades, psychologists have been using the Stanford-Binet on adults, although few adults were used in the standardiza-



tion.\* Therefore, from the standpoint of standardization, reliability and validity of norms, it would appear that more scientific justification exists for the use of the Bellevue with children than for the practice of using the Binet with adults. To be sure, other reasons may be launched to favor the use of one instrument over the other. Nevertheless, the writers have found many features of the Bellevue that warrant its use with delinquent and problem children. Among these, is the availability of performance material which is somewhat inadequate in the revised Binet. The majority of children tend to be handicapped with verbal material solely, and one must therefore consider performance tests in order to obtain a valid assay of the child's global functioning. The revised Binet, with so much of its verbal material, tends to take on the setting of a school situation. It is obvious that delinquent and problem children usually abhor school settings and dislike answering verbal questions, such as those they are called upon to answer in school sessions. Thus, the mental set that suggests itself to the child may in some cases inhibit maximum efficiency.

In the careers of problem children, it is not uncommon for them to be subjected to the Binet on two or even three different occasions by various social agencies. It is likely that an invalid appraisal would result since additional uncontrolled variables, not accounted for in the standardization, would be present. The effects of practice, familiarity and possible boredom, as a consequence of repeated administrations of the same test, are but a few factors which must be considered. Finally, the breakdown of the Bellevue Scale into subtests enables a continuous flow of test objects to be placed before the subject, thus insuring a greater degree of interest. In the examination of children, the interest factor is of the utmost importance; usually the examiner must guard against slight delays because the child will often grasp the opportunity to wander from the unpleasant situation created by his failure on some part of the test. Any aid in maintaining the child's interest, at-

\*For the Revised Stanford-Binet, 101 subjects, 18 years old, were used. Of those out of school, 11 had not completed high school, six had completed high school, and six had part-time schooling; while one was a postgraduate of a high school. These questions arise: (1) Are these subjects a true sampling of an adult population? (2) Do these cases justify the use of this test for adults?

tention and maximum effort which is inherent in a psychometric device is an added advantage to the clinical examiner as it affords a more exact picture of the child's ability.

It is not within the scope of this paper to review the reasons that may enter into the clinician's choice of one or another of these tests, but rather to offer a correct comparative interpretation of Binet and Bellevue I. Q. scores of atypical children. Suffice it to say, the writers feel that the table presented will be helpful in ascertaining quickly the relationships that exist between these scales. However, it should be emphasized that not only is the number of cases small, but they form a special group. The comparison between these two scales on a larger sampling of normal children should reveal interesting information in psychometrics.

#### SUMMARY

The Wechsler-Bellevue Intelligence Scales and the Revised Stanford-Binet, Form L, were given to a group of 61 delinquent and problem children. A study of the relationships between these two tests yielded the following results:

1. The mean I. Q. scores of the subjects on both tests indicate that they score dull normal intelligence. The mean age for the group is 12 years.
2. The Pearson coefficient of correlation between the scales is as follows: Full Bellevue I. Q. Revised Binet I. Q.  $.81 \pm .03$ ; Verbal Bellevue I. Q. Revised Binet I. Q.  $.87 \pm .02$ ; Performance Bellevue I. Q. Revised Binet I. Q.  $.56 \pm .06$ .
3. Feeble-minded and borderline atypical children tend to make slightly higher scores on the Bellevue than on the revised Binet. This tendency is reversed at the higher levels; the greatest divergences in test scores occur for superior subjects.
4. A provisional table of "equivalent scores" for the prediction of the Bellevue I. Q. score from the Binet I. Q. score for delinquent and problem children, is presented.
5. A discussion of the use of the Bellevue Scales with children is included.

Psychiatric Division  
Bellevue Hospital  
New York, N. Y.

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## EDITORIAL COMMENT

### A NEW CALL FOR PSYCHIATRY

The voice crying in the wilderness—now weak, now powerful—is a phenomenon not new to psychiatry. Pinel, Mesmer, Chareot, Freud and Meyer, and such great leaders from the lay world as Tuke, Dorothea Dix and Beers, all played their rôles as lonely prophets of eras yet to dawn. It seems at least possible that it is as a modest forerunner of such another new day that Richard M. Brickner, American psychiatrist and teacher of neurology, now raises in an unassuming way just such a call as these voices of the past in placing before fellow-scientists and the general public alike the question of what is basically the matter in the current world upheaval and whether the trouble is curable. It is such a call because Dr. Brickner's discussion relates to a subject of vast importance in world affairs and because it raises a question which only an informed psychiatrist could ask intelligently and which only psychiatry can answer. That question's possible historic importance is not at issue here; once answered, if it can be answered, one may concede that there is only a remote possibility that there will be either general acceptance of the answer or effective action in consequence. Yet that the question has been raised at all means that psychiatry is entering a new road from which there can be no turning. And the occasion warrants critical review of Dr. Brickner's work\* and critical analysis of his contentions here.

Most of us have gradually been becoming aware, if sometimes uncomfortably so, that psychiatry is rising to assume the ancient mantle of philosophy as the student and interpreter of human affairs as a whole. Already a once-obscure medical specialty has become the common meeting place of the sciences; its discipline has been applied directly to unify in one concept as a study of mankind the approaches of medicine, biology, anthropology, archeology, sociology and linguistics; its researches have led indirectly to clarifications in general scientific methods and the manner of making scientific interpretations; in fields as seemingly remote as astronomy, metallurgy and mathematics, workers are becoming more aware that nothing can be observed, interpreted or postulated without the screening medium of the human psyche.

If there is discomfort for the psychiatrist in this position, it may derive from genuine feelings of his lack of preparation for playing a major rôle

\**Is Germany Incurable?* By Richard H. Brickner, M. D. 318 pages with bibliography, and introductions by Margaret Mead, Ph.D., and Edward A. Strecker, M. D. Cloth. J. B. Lippincott Company. Philadelphia and New York. 1943. Price \$3.00.

in the human comedy, from doubts as to whether study *in vitro* of the deranged individual psyche can fit its student for understanding of, and active participation in, human activities on a world scale, from doubts, too, as to the existence of sufficient forensic and semantic ability to persuade world leadership that psychiatry is a fact-finding science and that its deductions are based on scientific fact and are not the productions of asylum-walled fantasy. Yet with all uneasiness and doubts, modern psychiatrists have come more and more to assume that the field of their specialty must be enlarged to the investigation and understanding of the activities of mankind as a whole. Their realization stems largely from Freud's repeated proofs that the understanding of human social activities and of the functions of the normal human psyche was possible only through study of mental mechanism in derangement. This realization of a widening field is shared, not only by Freud's followers, but by many among the bitterest and most unsparing critics of the psychology and the psychotherapy embraced in psychoanalysis.

Actual enlargement of psychiatry's field is, in fact, evident enough to anybody who can recall the specialty's contrasting positions in the days before and after World War I; and that it is still in the process of enlargement, is evident enough from the most casual scrutiny of psychiatric activity in the midst of World War II. That psychiatry, in spite of distinguished achievement, is not doing in this new war all it could do, all it should be allowed to do, or all that individual psychiatrists wish it were doing, may be conceded. Yet even such an embittered critic of American psychiatry's current therapeutic practices, recent leadership and present rôle in the war effort as Harry Stack Sullivan\* is willing to admit: "Modern psychiatry can find in the war and the aftermath its proper place among the sciences, techniques and practices that contribute positively to a better human future."

The progress of the last generation and, presumably, the "better human future" which Dr. Sullivan foresees, however, concern psychiatry in its narrow application as a medical specialty. What Dr. Brickner proposes is that psychiatry assume a rôle which is far afield from its past activities, the application of its specialized knowledge to the problems of the peace and the shaping of the future world. It is legitimately psychiatry's task. It was not philosophy or sociology or classical psychology which gave birth to the modern concept of dynamic psychology which, for the first time in recorded history, explains the acts and aspirations of man in terms which accord with his biological functioning and the society he has created in this world. Psychiatry is solely responsible for modern dynamic psychology; if its prin-

\*How Sweet Are the Uses of Adversity. Editorial by "H. S. S." in "Psychiatry," 6:2, May, 1943.

ciples are ever to be understood and made use of by world leadership, whether in planning a normal human society or in bringing psychotherapy to bear on an abnormal social trait, psychiatry must assume the responsibility for seeing that it is done.

In "Is Germany Incurable?" Dr. Brickner approaches a problem of tremendous import in a modest manner, for if the making available to human society of a body of scientific knowledge which should gradually—in the course of many generations—completely transform it, is a task almost unthinkable vast in scope, the application of a part of that knowledge to elimination of a single undesirable national trait is a commendably limited and perhaps practicable project. Dr. Brickner believes Germany is suffering as a national group from a "mental trend" which approaches "paranoia, as grim an ill as mind is heir to . . ." He marshals the evidence from an analysis of modern German society, quoting from an impressive list of documents which are—even more impressively—reports by writers, German and foreign, who were laymen for the most part and who, therefore, could have had no conception of what they were describing. He finds that the symptomatology has been evident "throughout at least five generations of German history." And he concludes that remedial therapy, by which the world can or could do something about restoring the national German mind to normality is at least theroretically possible.

It is not the intent here to analyze Dr. Brickner's evidence or even report it in detail. And neither does it appear necessary to examine minutely the author's background or his qualifications for a study involving the application of his own discipline to another science. The reader of this comment is advised to refer to Dr. Brickner's own text and form his own conclusions. That text is very possibly psychiatry's most important contribution to date to our understanding of this war and of the problems which will confront us after the war. More than 15 years of thought and planning, the author states, went into the preparation of this volume; and, unlike some labors of similar proportions, it cannot be summarized adequately in a form for reading in 15 minutes. A word seems in order, however, on the writer's use of that doubtful and disputed term, "paranoia." For nonbelievers in the existence of this hypothetical psychiatric entity, it may be said in advance of their reading that they can feel free to substitute "paranoid" and "paranoid conditions" and that the volume will lose no coherency or force of reasoning whatever. And the use of the term, whatever its theoretical implications may be to psychiatrists, undoubtedly contributes to ease of grasp of the problem by the laymen to whom Dr. Brickner is also addressing his study.



Dr. Brickner's contention is that once there is general recognition of what is wrong with Germany, something can be done about it; one great difficulty of the past has been lack of such recognition. He remarks "... Neville Chamberlain . . . did not know a paranoid reaction when he saw one." His book illustrates paranoid reactions in anecdote, fairy tale, social relations and as encountered in psychiatric practice and current history. There is adequate but simple demonstration of the fact that the paranoid is dangerous, there is illustration of paranoid trends in groups, and, finally, exemplification of German paranoid leadership from Napoleonic days through Bismarck and Wilhelm II to Hitler.

Recognition by psychiatrists of paranoid German leadership is nothing new. The last Kaiser has long been known as one of the outstanding paranoiacs of history. Erich Fromm\* has published an extraordinary analysis of paranoid trends in German culture. The phenomenon has also been recognized by laymen with specialized information. Alfred Korzybski,\*\* addressing the American Psychiatric Association's 96th annual meeting at Cincinnati in May, 1940, declared, "If the governments of the world had employed . . . a group of experts [on mental disorder] years ago, as a part of their duties they would have studied *Mein Kampf* . . . Evaluating the tragic situation they would have reported officially years ago that a sick man was getting into power and could have predicted the consequences." Korzybski further made the optimistic observation that knowledge of such a diagnosis among world statesmen would probably have prevented such mistakes as appeasement and that knowledge of it among those ruled by "sick" leaders would have resulted in those countries changing their own leaderships.

Dr. Brickner's proposals, as far as we are aware, are the first to suggest a really practicable method for the application of such suggestions as those of Korzybski. Dr. Brickner believes that nonparanoid individuals can be taught to recognize paranoid reactions and to realize that they cannot be reasoned with or appeased. So far, his program seems practicable. A paranoid trend is perhaps the easiest of the more common psychopathologic symptoms to recognize; general ability in its recognition would not necessarily imply lay diagnosis or lay attempts at treatment; and it is at least remotely conceivable that education could proceed to the point where, as the author remarks, "for the first time in history, the outside world would know what it is up against." Where Germany itself is concerned, the problem is another matter.

\*Escape from Freedom. By Erich Fromm. 305 pages with index. Cloth. Farrar & Rinehart, Inc. New York. 1941. Price \$2.50.

\*\*General Semantics, Psychiatry, Psychotherapy and Prevention. Am. J. Psychiat., 98:2, September, 1941.

Briefly, Dr. Brickner holds that the "clear" part of Germany, composed of individuals who are predominantly nonparanoid, must be placed in power following the war; paranoid figures must be eliminated from German national life, paranoid methods and paranoid textbooks from German education. Allied control of the new Germany must be maintained until the indefinite time when Germans themselves are taught to recognize paranoid reactions when they see them and thus to reject paranoid leadership.

In a later paper,\* Dr. Brickner has summarized, crystallized and presented both in more striking fashion and more compactly than in his book the aim of the educational methods which he feels should be applied to Germany, the reason for them and the reason for lay opposition to them. It is a valuable communication with a striking description of the relationship between the paranoid and his victim—the "paranee" is Dr. Brickner's word in this paper for the latter—and future printings of "Is Germany Incurable?" would gain by incorporation of the salient features of this short paper, for they are calculated to present the problem more graphically to the layman than is done in the more pretentious book.

This problem of presentation to laymen is the concern of psychiatry. The present masters of our destinies, the lords of war and peace, are laymen in so far as psychiatry is concerned in the same sense as is the average "man in the street." For the most part, they are innocent of the concept of paranoid reactions. If Dr. Brickner's work is of importance in the field of international relations—and it is the purpose of this writing to say that it is—the responsibility of presenting its ideas to those in places of power must rest solely on psychiatry, for only psychiatrists are in a position to give assurance that the ideas have scientific validity, just as only astronomers were in a position first to postulate and then to prove the existence of the planets Neptune and Pluto.

Psychiatric responsibility does not imply uncritical awareness of the dangers involved in the projection of an individual mechanism on an entire society; and it does not imply uncritical acceptance of all of Dr. Brickner's tenets. Intensive study of the work under review should convince most readers that there has been careful and skillful avoidance of the pitfalls of projection; and a careful study of the program proposed for treatment of postwar Germany will assure most that its warrant need not rest on a delicate differential diagnosis but that, even with a mistaken diagnosis, reeducation would have great possibilities for good and none for harm.

Referring more particularly to psychiatry's rôle in war than in peacemaking, Arthur H. Ruggles in this year's presidential address at the annual

\*The treatment of aggression. IV. The paranoid. By Richard M. Brickner, M. D. Part of a 1943 "round table" discussion. *Am. J. Orthopsychiat.*, XIII:3, July, 1943.

meeting of the American Psychiatric Association declared: "Our achievements in this global struggle have been slow to come, but they have been good, and we must see to it that they become better." It may be submitted that placing the scientific resources of psychiatry before our future peace-makers is one way of seeing that "our achievements . . . become better." That in so far as Dr. Brickner's work is concerned, there may be reasonable expectation that psychiatry will hope to better past achievements by working for its study in high places may be inferred from the fact that Edward A. Strecker, now president of the American Psychiatric Association, wrote an introduction to "Is Germany Incurable?" In that introduction he concludes his remarks with these words:

"The paranoia of a group, such as Germany, is a new concept. Perhaps it can be cured—after the rest of the world has expended its 'sweat, blood and tears.' Its cure might well stem from a better use of the human brain by all of us, through a well-thought-out, thorough plan of reeducation, of reculturing, such as Dr. Brickner suggests." American psychiatry may conceivably do a great service to the world if it can persuade those who will dictate the peace to take into serious consideration the question of a "cure" for Germany as Dr. Brickner puts it here.

## BOOK REVIEWS

**The Sexual Cycle in Women.** By THERESA BENEDEK, M. D., and BORIS B. RUBENSTEIN, M. D., Ph. D. 307 pages. Paper bound. Psychosomatic Medicine Monographs. Vol. III, Nos. I and II. 1942. Price \$3.50.

The subtitle of this book, which reads "The Relation Between Ovarian Function and Psychodynamic Processes," elucidates the direction and aspirations of this interesting and progressive study. Psychoanalysis and endocrine physiology join forces on the same biological stage, revealing the dynamics of war and peace in the drama of woman's reproductive life.

The authors aim to investigate the correlations between endocrine and psychic functions. The endocrine investigation of the ovarian cycle is accomplished histologically by the vaginal smear method and is complemented by the body temperature technique. The psychic concomitants, in their psychoanalytical presentation, and the ovarian hormonal states become etiologically and chronologically correlated.

The investigation and results obtained are based on material of 152 ovarian cycles of 15 women of child-bearing age. The technique of vaginal smears, as well as the psychoanalytical concepts of personality and the complexities of woman's Oedipus situation are discussed with commendable clearness.

It was found that in women who have achieved genital levels of libido evolution, the hormone cycles are predominantly normal. It is also seen that fixating traumata in the pregenital stages interfere with hormonal functioning so that abnormal ovarian cycles are in evidence. The complex interrelationships of hormonal and emotional growth processes are obvious. This research also reveals that the libidinal evolution and stage of integration is repeated in each ovarian cycle so that the individual's psychosexual development can be recognized in miniature.

The authors believe that the "psychic apparatus offers a highly sensitive bio-assay for estimation of hormonal changes." They realize that it is only a beginning and that the method is incomplete. Estrogen and progesterone are only a fraction of woman's complex total hormonal system, and there are also a multitude of emotional factors and experiences involved which cannot be called libidinous or sexual. But the book opens vistas for further research in psychosomatic functions.

The tabulations of results and charts of vaginal smears and cells enhance the value of this monograph and offer a basis for further laboratory and clinical observations. It is a book which will be welcomed by those interested in and believing in psychosomatic medicine and its therapeutic possibilities.

**Psychology for the Fighting Man.** E. G. BORING and M. VAN DE WATER, editors for a committee of the National Research Council in collaboration with Science Service. 456 pages with index and illustrations. Pocket size. Paper. The Infantry Journal—Penguin Books. Washington, D. C. 1943. Price 25 cents.

To the reviewer acquainted with what passed for military psychology in World War I, as well as with much of the material circulated in our own and the British armies during World War II, this pocket volume for the man in uniform will not appear to be the last word, but just about the first important word, on an enormously significant subject. It was generally understood a quarter of a century ago—and in thousands of recorded and unrecorded wars throughout uncounted millenia before—that success in battle depended largely on such psychological intangibles as discipline, courage, self-restraint, *esprit de corps* and general morale. But except for the matter of discipline, which was chiefly achieved through endless repetitions of close order drill, instruction in these specialties was always poorly organized, usually hit or miss and invariably based on experience derived from rule of thumb.

The line officer of that other World War usually knew and generally tried to impart to his men the fact that interminable parade ground drill established the habit of instantaneous obedience which was essential for coordinated action under fire. But he also usually "knew" that a bully was always a coward; he believed that courage was an inborn something usually called guts which enabled a man to go forward in spite of fear; and he was sure that the man who lacked guts was simply a weakling to be despised under the label of "yellow." To support himself, he sometimes "knew" ("But don't tell your men") that the enemy usually ran before crossing bayonets in hand-to-hand fighting. To encourage self-discipline in regard to liquor, he had W. C. T. U. precepts, war-emergency national prohibition (in this country) and the guardhouse; in regard to women, he had a fearsome moving picture called "Keeping Fit to Fight," the exhortations of the chaplains and threats of pay loss and disciplinary action for those who contracted gonorrhea or syphilis. *Esprit de corps* was something achieved not only through an organization's demonstration on parade ground and in training of superiority to other outfits, but through off-duty combats with those other outfits, and through unreasoning pride in the "old man's" ability as a pistol shot and the "top kick's" achievements in toughness. Morale was something which summed up these other desiderata and which in addi-

tion might depend on such factors as seeing that one's own men got the best obtainable in the way of quarters, food and clothing.

This review of 1917-1918 war "psychology" is pertinent because, in spite of the tremendous strides made in dynamic psychology during the last 25 years, military psychology appears to have advanced but little in the interval; early World War II publications on the subject started just where those of World War I ended. A current British volume, for example, has an excellent discussion of discipline and its purpose (which wasn't but could have been based on a 1914 American publication on leadership and military training); but it pictures the Nazi as uttering "lachrymose squeals" for mercy when he meets British bayonets; and it discusses sex with bated breath, in terms of "purity" and the dangers of venereal disease, and without the slightest reference to homosexuality or masturbation.

"Psychology for the Fighting Man," backed by the tremendous prestige in the army of "The Infantry Journal," priced to fit any enlisted man's budget and printed and bound to fit a blouse pocket, is a volume to put an end to all that. "This book tells all about military psychology," says the editors' "Note to the Reader." As far as this reviewer can make out, that is precisely what it does. There appears to be nothing essential omitted, nothing unpleasant glossed over or presented in terms of deference to popular or group prejudice. In the teeth of reorganizing prohibition sentiment, it is noted that alcohol has a proper use for "relaxation"—"The medical officer may even order you to drink it as medicine." Then the scientific, not moralistic, reasons for avoiding overindulgence are properly stressed; the known effects in reduced physical and mental efficiency are noted; there is an excellent discussion of the advisability of "knowing your limit;" but the assertion, although generally accepted, that the effects of alcohol are "in proportion to your body weight" might well be omitted in the light of J. M. Nagle's alcohol susceptibility researches.

This book has the first realistic discussion of an army's sex problems which this reviewer has ever seen addressed to the military man. It is not perfect; the pitfall of affect-laden words has not been altogether avoided; improvements are possible and needed; but basically this discussion is scientific and sound. There is direct answer, for example, to the questionings of the soldier who is disturbed by his uninhibited fellow's conviction that the man who won't fornicate won't fight. "The soldier whose standards are such that he can indulge in promiscuous sexual activity without disgust or feeling of guilt may have a good fighting spirit and be an efficient soldier. . . . [But] . . . The typical man in the Army cannot find true satisfaction with prostitutes or in other promiscuous relationships." And if



the typical man in the Army is denied "substitute satisfactions" in the shape of letters and reminders of affection from the woman he cherishes at home and if he then resorts to seeking sexual satisfaction with other women who are at hand ". . . he will not be able to do this without conflict with conscience and feelings of guilt which lower his efficiency and morale as a soldier." The discussion recognizes the possible dangers as well as the benefits in the "important" instruction given by pamphlet, moving picture and lecture on the physical aspects of sex. There is sound treatment of both homosexuality and masturbation; there might well have been greater emphasis on both problems. In regard to masturbation in particular, there is need for more than perfunctory assurance as to the harmlessness of its normal or moderate practice in view of the character of the popular notions which are generally still prevalent on this subject.

Treatment of material less subject to popular prejudice is adequate and sound, from the psychology involved in the proper uses of the sense organs, through discussion of mental derangement, to analyses of rumor and psychological warfare. In connection with mental disorder, there is material which the line officer and noncommissioned officer may well find priceless: "An obstinate refusal to accept the truth on the part of a man of ordinary good judgment is a danger signal . . . Don't try to argue with such a man." Discussion of the unconscious and of normal and abnormal mental mechanisms is adequate.

Fifty-nine outstanding American psychiatrists, psychologists and officers of the armed services collaborated in providing the material for this book. Responsible for selection of the material and for its presentation in non-technical, simple English are Professor Boring, who adds, to his eminent qualifications as a teacher and research worker in psychology, service as a psychologist in training camp and in the Surgeon General's office in the first World War, and Marjorie Van de Water of Science Service.

The result is a volume which might well be in the hands of every inductee in the armed services and of every prospective inductee. If a volume dealing with civilian problems could be compiled along the same lines, it would be a better general textbook of mental hygiene than any of which this reviewer is now aware. Wood pulp paper, cheap paper binding, sale at a nominal price, and phraseology so simple that not only the so-called intelligent layman but almost any literate layman of moderate I. Q. should be able to understand it are not the usual marks of scholastic attainment. In "Psychology for the Fighting Man," these uncommon means of presentation only add to the value of a distinguished and important scientific achievement.

**Counseling and Psychotherapy.** By CARL R. ROGERS. 450 pages. Cloth. Houghton Mifflin Company. New York. 1942. Price not given.

The aim of this work is to be found in a quotation from the introduction written by Leonard Carmichael in which he says, "Throughout the book the author develops a point of view which gives emphasis to the significance of insight in the client . . . Thus behavior symptoms which have previously puzzled, alarmed or morbidly depressed the client are often eliminated." The reviewer is confident that Dr. Carmichael did not intend to claim for his friend originality in the aim and purpose of psychotherapy which has been practiced understandingly since psychoanalysis first appeared upon the horizon and gave form and direction to medical advice.

Jung and Adler were the pioneers in modern psychotherapy. Prior to their time, the physician could only advise his patient what seemed to be practical and wise in specific instances. Since that period, the methods of psychotherapists have been as Dr. Carmichael describes them and the client or patient will be able to say, as is quoted in the introduction: "I am working toward my new goal which I understand. I am enjoying becoming independent of this help. I feel confident that I am going to be able to solve new problems when they arise in my life." Such enlightenment is the purpose of modern psychotherapy. Dr. Rogers has this constantly in mind. He does not become involved in abstract speculation and discussion but confines himself to practical aspects of the subject as shown in specific instances.

Parts I and II take up the more general aspects of psychotherapy as practiced in a nonmedical atmosphere. The rest, nearly one-half of the book, comprising Parts III and IV, is given over to the presentation of the cases of two patients designated as Barbara and Herbert. They are given in detail. The former record includes 15 interviews and the latter eight.

The book will be of interest to all who are concerned in the guidance of maladjusted individuals, whether it be in school, in business or in social life.

**A Survey of Alcohol Education in Elementary and High Schools in the United States.** By ANNE ROE, Ph. D. 132 pages with 34 tables, references, and bibliographies of textbooks and of state laws on alcohol education. Paper. Quarterly Journal of Studies on Alcohol. New Haven. 1943. Price \$1.00.

Teaching of the "effects" of alcoholic beverages is required by law in the elementary public schools of all states and the District of Columbia and in the high schools of all but four states. In the present monograph, Dr. Roe presents the results of an inquiry which involved much correspondence with the school officials of 47 states, with private school and Catholic dio-

cesan authorities, with publishers, and with education, church and "alcohol-education" organizations. The bibliography of texts reviewed comprises more than 180 titles. The results of these labors are given in compact and readable form in Part I of Dr. Roe's survey, under the heading of "Teaching Practices and Materials." Part II, "The Legal Regulation of Alcohol Education," appeared last year in the "Quarterly Journal of Studies on Alcohol."

Where alcohol is concerned, even a casual reading of Dr. Roe's report would seem to indicate that nearly all American children are learning some things which are not so and that some American children are learning a great many things which are not so. In her carefully compiled and detailed tables, the student may check lists of the most commonly presented truths, half-truths and misstatements to verify this casual first impression in detail. For such statements as "Alcohol damages or destroys body cells . . . steals or absorbs water from cells . . . swells or hardens nerve cells . . . is a cause of mental disease . . . shortens life . . . is habit forming" and is a "contributing cause in 25 to 50 per cent asylum inmates in New York," the tables give full references to specific texts. Official state publications are no more authoritative than commercial textbooks. A publication of the Department of Education of the Commonwealth of Massachusetts declares that "alcohol tends to injure the antibodies" in the blood; and official publications of Arizona, Minnesota and Missouri make statements which Dr. Roe summarizes to the general effect of "Parental alcoholism may be responsible for feeble-mindedness, insanity, deformity, nervous weakness, etc., in the children."

Dr. Roe finds some, but not the greater part, of this general teaching of what isn't so to be due to the copying by textbook writers of errors in older textbooks, some due to the difficulty experienced by the educator who is not a research worker in adapting material from any scientific field for textbook purposes. But the sources of textbook material on alcohol appear chiefly responsible. The author says, "The largest part of it comes from publications of temperance organizations. . . . The influence of such a publication as the Syllabus in Alcohol Education of the Women's Christian Temperance Union, for example, has been outstanding. Some of the state publications appear to have been largely derived from it."

Contrary to the impression of many laymen and many general medical men, there is a tremendous body of objective, scientific facts available on the direct and indirect effects of alcoholic beverages on the human system. Largely through the efforts of the Research Council on Problems of Alcohol, knowledge of these facts is becoming available in authoritative publications addressed both to the medical profession and the public in general.

That these facts—not the damaging fictions which Dr. Roe reports—should be taught is a matter of general concern as well as of particular concern to psychiatry, which is the medical specialty which deals with alcoholism and alcoholic disorders. How teaching of the facts can be brought about is a question—considering the presence of group obsessions which have long been demonstrated to be uninfluenced by reason. Dr. Roe has some pertinent suggestions; but the greatest value of her survey is as an essential piece of general orientation.

**Encephalitis.** A Clinical Study. By JOSEPHINE B. NEAL, M. D. Foreword by Hubert S. Howe, M. D. 563 pages. Cloth. Grune & Stratton. New York. 1942. Price \$6.75.

This is a report on a research project done under the auspices of a grant from the William J. Matheson Commission for Encephalitis Research, of which Dr. Willard C. Rappleye is chairman.

The author had the assistance of collaborators eminent in psychiatry, neurology, neuropathology and pediatrics. Dr. Neal herself is associate director of the bureau of laboratories of the New York City Department of Health and clinical professor of neurology, Columbia University. As executive secretary of the Matheson Commission for the Study of Epidemic Encephalitis, she has had an unusually extensive clinical and administrative experience and is well qualified to write upon this subject. The topic is treated with great clarity and thoroughness.

Psychiatrists will be interested in the chapter entitled "The Psychiatric Sequelae of Epidemic Encephalitis." Since Jelliffe's monograph, which was published about 15 years ago, more and more attention has been given to the postencephalitic neurological and psychiatric disorders. More and more life histories can be traced which portray the devastating effects of the disease where many times so great improvement followed the acute phase that a hopeful outlook seemed to be justified. The number of such individuals who later became patients in mental hospitals indicates the severity of the sequelae. According to Dr. Horatio M. Pollock of the New York Department of Mental Hygiene, 1,247 were admitted to public mental hospitals in New York State over a period of 20 years. This, however, is by no means the measure of the devastating effects of the disease. The characteristic psychiatric sequelae are in the form of a gradually deepening deterioration. Overt conduct disorders which make it necessary to remove the patient from his home are the exception. Dr. Rosner, who prepared this chapter, believes that severe mental symptoms at the onset seem to forecast a greater probability of permanent damage.

After a comprehensive introduction, giving an historical review and pointing out the several recognized types such as the St. Louis type, the Japanese B, the Australian X-disease and others, the subject is taken up under several captions as "Epidemiology," "Clinical Course," "Acute and Chronic Phases" and the "General and Surgical Treatment of Postencephalitic Symptoms." Encephalitis as a complication of other diseases makes an interesting part of the book; measles, smallpox, mumps, scarlet fever, Rocky Mountain spotted fever and the several types of equine encephalitis are all adequately dealt with.

This is a book which should be thoroughly studied by anyone who would inform himself upon the latest developments in the study of this important disease, and it should find a place in every medical library.

**Einführung in den Behn-Rorschach Test. Textband.** By HANS ZULLIGER. 232 pages. Cloth. H. Huber. Bern. Imported by Grune & Stratton. New York. 1941. Price \$3.80.

When Rorschach published "*Psychodiagnostik*," he already felt the need of another series of inkblots, which would parallel his own and would serve as a control series for reexamination. Behn-Eschenburg developed, with the aid of Rorschach himself, such a series in 1920. He used these blots in an experiment with school children and published his results in 1921; but the new series was not made available to the public until 1941 (H. Huber, Bern). In his "Einführung," Zulliger offers an excellent introduction to the Rorschach method, and specifically to the use of the new series of blots. Twenty-two pages of his book are given over to a presentation of some 500 sample interpretations of the new inkblots and include a description of the "normal details," without which a record could not be scored. More than half of the book consists of scored and interpreted Rorschach records obtained from 25 subjects. Both the original Rorschach plates and the new Behn-Rorschach plates were shown to most of these subjects. Zulliger suggests the abbreviated form, Bero, be used to designate the latter series.

Zulliger proceeds on the assumption that there is an extremely close correspondence between the Rorschach and the Bero series and that consequently the same number of whole, detail, movement, color, form, etc., interpretations can be expected from both series. His own examples, however, frequently show a marked difference between the Rorschach and the Bero records. Invariably, Zulliger ascribes these differences to changes in the psychological condition of the subjects. This procedure does not appear justified, because Zulliger does not provide experimental evidence in support of his assumption that the two series of blots correspond perfectly. This observation, however, is not a very serious objection since the present

norms appear to be satisfactory for most cases and since the correction of norms can be made relatively easily by anyone working regularly with the Rorschach and the Bero plates.

Everything Zulliger writes about the administration and interpretation of records is equally applicable to the Rorschach and the Bero plates. His book is modelled after Rorschach's "Psychodiagnostics." Rorschach was very concise. Zulliger has succeeded in expressing explicitly many important ideas which Rorschach presented in a condensed and implicit form. Another significant contribution is the author's application of the Rorschach method to character analysis for educational and vocational purposes. Zulliger is known to have been very successful in using the Rorschach method as an aid in the solution of problems such as: "Why does John steal?" "Should Edward be placed in a reformatory or should he be given another chance?" "For what vocation is Mary best fitted?" "Is the testimony of Miss Smith trustworthy?" Zulliger has been able to answer these difficult questions well, not only because he has mastered the Rorschach technique but also because he has very wide and deep psychological and pedagogical experience. Never were the Rorschach findings the only basis for his recommendations. It is Zulliger's ability to link the Rorschach findings with sound psychological principles that accounts to a large degree for his success with the Rorschach method. His Rorschach record interpretations should be required reading for all Rorschach analysts.

Zulliger is a Swiss educator, well known for his application of psychoanalysis to classroom situations. His articles on this subject appeared in the "American Journal of Orthopsychiatry." His previous contribution to Rorschach literature consists of a book on juvenile thieves and articles illustrating the use of the Rorschach method as an aid in education and vocational guidance. The author refrains in the present, as in his previous publications, from discussing the Rorschach as an aid in psychiatric diagnosis and prognosis, but concentrates on character or personality analysis. The present book belongs to the best works on the Rorschach method.

**Neuroanatomy.** By FRED A. METTLER, A. M., M. D., Ph.D. 476 pages, with 337 illustrations including 30 in colors and index. Cloth. The C. V. Mosby Company. St. Louis. 1942. Price \$7.50.

Dr. Mettler, who is professor of anatomy at the University of Georgia School of Medicine, states that this text has been written to meet the needs of the medical student beginning instruction in neuroanatomy. The book would seem to meet these needs well. It has all the characteristics of a good text, it is clear, concise, systematic and, what is especially important in a



field like neuroanatomy, it is well and amply illustrated. The colored diagrams showing the distribution of the cranial nerves deserve especially favorable comment. As regards terminology the commonly used English terms, the B N A terms and any alternative names are stated for each structure. The first part of the book deals with the gross aspects, the second part with the microscopic anatomy of the neural system.

This reviewer feels that, from the didactic standpoint the detailed description of the cerebral circulation and of the cranial nerves might better be taken up after the description of the topography of the brain. Also the "Autonomic system" might better be discussed in a separate chapter, rather than in combination with the cranial nerves." There is a detailed list of selected references, a subject index and an author's index.

This book will, no doubt, come to be known as one of the better texts on neuroanatomy. It is recommended to students of medicine, to practitioners, and, as a quick reference work, also to neuropsychiatrists.

**Man in Structure and Function.** By FRITZ KAHN, M. D. Translated from the German and edited by George Rosen, M. D. xv, xxii, 742 and xiv pages, with preface, tables of contents, 461 plates and index. Two volumes. Cloth. Alfred A. Knopf. New York. 1943. Price \$10.00.

This "human biology," written for the layman by the authoritative author of "Our Sex Life," is the sort of thing Alexis Carrel probably aimed at but failed to achieve in "Man the Unknown." Dr. Kahn presents man, not as cadaver plus psyche, but as a living, breathing complex organism, infinitely varied and yet a unity in both structure and function; a reader of this book will find it difficult in future to conceive of man as in terms of pure anatomy or in terms of pure behavior; without stressing the point, this work conveys most satisfactorily the fact that structure and function are merely two views of the same thing.

Dr. Kahn has put a great many generally accepted facts into simple language, and Dr. Rosen has given an adequate translation into smooth and extremely readable English. The extraordinary illustrations, photographs, diagrams, schematic representations of body structures from cells to the central nervous system and the sex apparatus are the outstanding feature of the book. Both student and general reader will find these illustrations far more illuminating in respect to the life of man and his basic physical equipment for living than those of the conventional physiology.

No work of this sort could avoid all oversimplification or avoid the making of occasional unqualified statements on doubtful issues; probably any specialist could find instances in regard to his own specialty; but the professional reader will find the book as a whole sound. There are some re-

grettable lapses in the editing, which it is to be hoped will be corrected in future editions. For example, it is stated on page 234 that it is not known whether a virus "is a living creature like the bacillus . . ." while on page 235, a virus is referred to without qualification as "a living creature." And on page 248 is a slip of the pen which produces the assertion that "Unlike man, all combustion machines give off carbonic acid . . ." These and other like oversights, not unusual for the first edition of a translation, doubtless will be corrected in later printings. Perhaps the publishers will find it possible to go farther also in the matter of substituting common weights and measures for their metric equivalents in the illustrations—something taken care of only in part by the presentation of an introductory table and the careful writing of undercaptions. It is not a serious matter for the student, but it can detract considerably from the enjoyment of the reader for pleasure.

"Man in Structure and Function" would have an appropriate place on the library shelves of any cultivated reader with an interest in how man lives; it would be a splendid going-away present for a college student or student nurse; and it would be an addition to any secondary school or nursing school library. For the nontechnical student, it is pretty nearly an ideal reference work.

**Papers from the Second American Congress on General Semantics.**

Non-Aristotelian Methodology (Applied) for Sanity in Our Time. Compiled and edited by M. Kendig. xxiv and 592 pages, with introduction, biographical sketches of contributors and program of congress. Paper. Institute of General Semantics, Chicago. 1943. Price \$5.00.

This volume is composed largely of the papers presented at the 1941 congress of the general semantics movement founded by Alfred Korzybski, with supplemental papers replacing program contributions where addresses were given from notes or speakers failed to provide manuscripts—one such paper is that of Korzybski himself, "General Semantics, Psychotherapy and Prevention," first printed in the American Journal of Psychiatry in September, 1941, and reproduced in the present volume in place of two addresses for which the author did not use manuscripts. Some other papers have been published previously, that by Hervey Cleckley, M. D., "Semantic Dementia and Semi-Suicide: A Mask of Sanity," appeared, for example, in THE PSYCHIATRIC QUARTERLY, 16:2, July, 1942.

Distinguished members of the psychiatric, the teaching and other professions are contributors to the present volume. The contributions, like the papers of any other scientific association meeting, naturally vary widely in

merit and in smoothness of presentation; and, in addition, general semantics, as a new methodology, seems to have its own difficulties in achieving integration. The question of general semantics as a psychotherapy or as a methodology influencing the practice of psychotherapy or even general medicine has been widely discussed; and it is difficult to escape the impression that fantastic claims have been and are being made. But, a dentist contributes a paper to the volume reviewed here on the startling subject of semantogenesis and control of dental caries. To summarize and perhaps misrepresent, he advances the entirely reasonable propositions that semantic misevaluations lead to improper diet and hence to dental caries; and that they also lead to emotional disturbances, hence to changes in the pH of the saliva, with resulting changes in the digestive processes, and hence to dental caries. A number of the congress papers are devoted to practical applications of general semantics to education, mental hygiene, marital counseling and psychotherapy. The dynamic psychologist will consider some of the theoretical bases of this psychotherapy to be of doubtful validity and some of its applications in nonmedical hands superficial if not dangerous; but a reading of the reports leaves no doubt that in many instances this method has brought improved adjustment and symptomatic relief. In its bearing on the theory and practice of psychotherapy by other methods, general semantics deserves more attention than it has been receiving; our language for example, is not adapted to the description of, or to the understanding of, the unconscious; we use it constantly as if it were; the methodology of general semantics could be applied here with gain.

The brief discussion by Adolf Meyer at the 1940 meeting of the American Psychiatric Association—printed in the present congress papers—could not be bettered as an evaluation of the possible contributions of general semantics to psychiatry. The unprejudiced reader of these second congress papers should find much therein which has bearing on his orientation toward himself, his practice and his patients.

**Autonomic Regulations, Their Significance for Physiology, Psychology and Neuropsychiatry.** By ERNEST GELLHORN, M. D., Ph.D. XII and 373 pages, with 80 illustrations. Interscience Publishers, Inc. New York. 1943. Cloth. Price \$5.50.

In his introduction, Dr. Gellhorn writes: "The following discussions, based largely on investigations performed in our laboratory during the past six years, attempt to analyze the functioning of the organism under a variety of conditions. The reactions occurring in various organs have not been studied from the point of view of organ physiology, but from that of organismic physiology." This quotation in brief illustrates the orientation

of the book. The various adjustment reactions of the organism, performed by the autonomic system, e. g., to hypoglycemia, to asphyxia and to hemorrhage are discussed, also the autonomic regulation of cerebral circulation.

Other parts of the volume deal with the autonomic-somatic integrations, the autonomic basis of emotion, and the principles of autonomic organization. In the final chapter on "Autonomic Nervous System and Neuropsychiatry," the author advances the thesis that, "These observations demonstrate in schizophrenic patients not only a decreased reactivity of the sympathico-adrenal system, but also a relative preponderance of the vago-insulin system" and that "a relative weakness of sympathetic centers is largely responsible for the altered behavior in schizophrenia." No doubt, most psychiatrists will disagree with this thesis.

Each chapter consists of a detailed discussion of the subject matter under consideration and ends with a clear and concise summary. There is an unusually large number of references and authors' names inserted in the text, which renders the reading somewhat difficult. The bibliography lists 1,100 sources of references and covers 43 pages. "Autonomic Regulations" is a scholarly book to be recommended to those interested in physiology and in the autonomic system.





NEWTON J. T. BIGELOW, M. D.



### NEWTON J. T. BIGELOW, M. D.

Newton J. T. Bigelow, M. D., first assistant physician at Pilgrim State Hospital, was appointed superintendent of Edgewood State Hospital on August 16, 1943, by Commissioner Frederick MacCurdy of the Department of Mental Hygiene. On September 1, he was named Assistant Commissioner of the Department to serve in the stead of H. Beckett Lang, M. B., who is on active service with the United States Navy.

Newton Bigelow was born on January 15, 1904, at London, Ontario. He was educated in the schools of that city and at the University of Western Ontario, from which he was graduated in arts in 1925 and in medicine in 1928. After interning at Victoria Hospital, London, he entered the New York State hospital service at Utica State Hospital on July 1, 1929. He was promoted through the various grades to director of clinical psychiatry at Utica and at Pilgrim, then to first assistant physician at the latter hospital. Edgewood, of which he is now superintendent, the newest of the New York State mental hospitals, will receive patients when fully equipped and manned, although the building program is incomplete.

Dr. Bigelow served as neurologist and psychiatrist to Faxon Hospital, Utica, and to the Utica Dispensary during his years in Utica; as neuropsychiatrist at the Armed Forces Induction Station at Grand Central Palace, New York City, and as assistant neurologist at the Vanderbilt Clinic while he was first assistant physician at Pilgrim. He is an associate editor of *THE PSYCHIATRIC QUARTERLY* and is author or coauthor of a number of reports on studies relating to personality in functional and alcoholic disorders, family care, psychosomatic pathology, shock therapy and administrative methods. He is a member of the American Medical Association, the American Psychiatric Association and the Long Island Psychiatric Society, and is a diplomate of the American Board of Psychiatry and Neurology. His nonprofessional interests include music, painting and language study.

Dr. Bigelow was married in 1929 to Alberta Turville of Wallacetown, Ontario. They have three children.

## NEWS AND COMMENT

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### DR. C. MACFIE CAMPBELL DIES AT 66

C. Macfie Campbell, M. D., professor of psychiatry at Harvard Medical School, medical director of the Boston Psychopathic Hospital, former president of the American Psychiatric Association, and one of the outstanding leaders of his specialty in the United States, died in Cambridge, Mass., on August 7, 1943, at the age of 66.

Author, among other contributions, of two volumes on "Human Personality and the Environment" and "Destiny and Disease in Mental Disorders," Dr. Campbell's interests went beyond the boundaries of his specialty. He was active in promoting general knowledge of the sound principles of mental hygiene, sought to bring about public recognition that our basic physical and mental materials are coarse and crude and that it is humanity's task to utilize this raw material as best it can; he was interested in children's problems; and his memberships included the American School Hygiene Association and the American Psychological Association.

Like many other outstanding authorities in modern psychiatry, Dr. Campbell was a graduate of the New York civil State hospital system. After coming to the United States from Great Britain in 1904, he was assistant physician at the Psychiatric Institute, then located on Ward's Island, leaving there to become assistant physician at the Bloomingdale Hospital, White Plains.

Charles Macfie Campbell was born on September 8, 1876 in Edinburgh and was educated there, receiving his medical and surgical degrees from the University of Edinburgh, M. B. and Ch. B in 1902 and M. D. in 1911. He also studied in Paris and Heidelberg. Dr. Campbell left the Bloomingdale Hospital in 1913 to become associate professor of psychiatry at the Johns Hopkins University, a position he held until he became professor of psychiatry at Harvard in 1920. He became an American citizen in 1918.

Dr. Campbell was president of the American Psychiatric Association in 1937. He also was a member of the American Neurological Association.

In 1908, Dr. Campbell was married to Jessie Deans Rankin of Glasgow. There are three daughters and a son, now Lt. Charles M. Campbell, Jr., of the army medical corps.

## ISADOR H. CORIAT, M. D., IS DEAD AT 68

Isador Henry Coriat, M. D., psychiatrist, writer, twice president of the American Psychoanalytic Association, and one of the earliest workers with psychoanalysis in this country, died in Boston on May 26, 1943, at the age of 68, after a career which was an outstanding contribution to American psychiatry.

Born in Philadelphia on December 10, 1875, he displayed an early interest in science and was coauthor with Dr. A. E. Austin as early as 1898 and before his own graduation from medical school of "A Laboratory Manual of Clinical and Physiological Chemistry." He abandoned the field of organic medicine, however, when he received his M. D. degree from Tufts in 1900 and entered psychiatric practice as an assistant physician in Worcester State Hospital where Adolf Meyer was at that time pathologist and director of clinical and laboratory work. After five years at that Massachusetts hospital, he entered private psychiatric practice in Boston and remained in that city for the rest of his life.

Dr. Coriat took an interest from the start in abnormal psychology and the study of mental mechanisms and was the author of a number of reports on these subjects. In 1908, he was coauthor of a work on religion and medicine, dealing with the Emanuel movement; and in 1910, he published the first book which was entirely his own, "Abnormal Psychology." At about this time, he developed an active interest in psychoanalysis and took an active part in developing knowledge and practice of this specialty. He wrote widely on psychoanalytic subjects, was one of the first American analysts to apply psychoanalytic concepts to literature—he published "The Hysteria of Lady Macbeth" in 1912—and he wrote much later on more technical subjects; his book on "Stammering," published in 1928, is of recognized authority on that personality disorder. He was an active writer up to the time of his death, and it is understood that an unpublished manuscript, "The Death Instinct," is to be brought out posthumously.

Dr. Coriat was president of the American Psychoanalytic Association in 1924-1925 and 1936-1937, was active in the Boston Psychoanalytic Society, of which he was president from 1930 to 1932, and was a lecturer, member of the training committee and training analyst at the Boston Psychoanalytic Institute. He was a fellow of the American Medical Association and the American Psychiatric Association and was a member of numerous other medical, psychiatric and psychoanalytic organizations. Nonprofessional activities included membership in the Jewish Academy of Arts and Sciences and in the Masons. Dr. Coriat was married to Etta Dann in 1904. There were no children.

### DR. SHANAHAN RETIRES AFTER 42 YEARS OF SERVICE

William T. Shanahan, M. D., superintendent of Craig Colony for Epileptics, retired on September 30, 1943, after serving as head of that institution for just 12 days short of 34 years. From medical interne through the various grades to superintendent, he had been on the staff of Craig Colony for more than 42 years.

William Shanahan, born at Syracuse on May 14, 1878, received his M. D. degree from Syracuse University in 1898. He served an internship at the Sisters of Charity Hospital in Buffalo and, after a brief period of private practice and postgraduate study, became an interne at Craig Colony on February 11, 1901. After the usual promotions, he was named superintendent on October 12, 1909.

Dr. Shanahan is the author of numerous scientific papers on convulsive disorders and of encyclopedia and textbook material in his field. He was president of the National Association for the Study of Epilepsy in 1912 and 1918. In 1912, he made a special trip to Europe to visit institutions for patients with convulsive disorders in Belgium, the Netherlands, Germany and Great Britain.

Dr. Shanahan was the second superintendent Craig Colony has had; he succeeded Dr. William P. Spratling, who was the first head of the institution. The colony has grown something like 10 times in size since he became head of it. Dr. Shanahan was married to Bridget Fox in 1903; and they have six children. The Shanahans will live in Eggertsville near Buffalo.

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### QUARTERLY CONFERENCE IS HELD ON SEPTEMBER 15

The Quarterly Conference of the Department of Mental Hygiene was conducted in the form of a round table discussion of administrative problems followed by a dinner meeting in Buffalo on September 15, 1943. Commissioner Frederick MacCurdy, M. D., presided at the round table which discussed the new classification of officers and employees, maintenance values, the employee shortage, the problem of food, and the training of cadet nurses. Commissioner Clifton T. Perkins of the Massachusetts Department of Health was principal speaker at the dinner meeting. The superintendents attended meetings and visited exhibits of the American Hospital Association the day after the conference.

The conference passed resolutions on the retirements of Commissioner William J. Tiffany and Superintendents George W. Mills and John R. Ross. Dr. David Corcoran was elected officers' representative on the State Hospital Retirement Board.

### FELD-HAMILTON PROVISIONS GO INTO EFFECT

The provisions of the Feld-Hamilton civil service "career" law went into effect in the New York State Department of Mental Hygiene on October 1, 1943. It is too early to assess their effects; at the time of going to press, some classifications and pay allotments were not generally known; and all details are subject to general change or to modification on individual appeal.

Much confusion and preliminary dissatisfaction have been evident; the confusion appears unavoidable, and it is not yet time to say how far the dissatisfaction is justified, although general impressions now are that the change in the law will not produce immediate material benefits in the Department and will affect adversely many officers and employees, results contrary to the intent of the act, which is aimed to encourage the following of careers in the civil service. *THE QUARTERLY* will endeavor to report on the workings of the new law and on the general reaction in the Department in a later issue. Meanwhile, it seems important to say that adjustments may improve very materially what many regard as an unpleasant situation and that New York State psychiatrists, charged as they are with the unpaid wartime duty of guarding civilian mental health, have a new responsibility in maintaining their own morale.

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### MISS GRACE POTTER, PSYCHOANALYTIC WORKER

Miss Grace Potter, a leader of the women's suffrage movement a generation ago, editor, student and early worker in the field of psychoanalysis, died in New York City on July 28, aged 69. She had been a friend of Freud and of Anna Freud and a pupil of Rank and Jung as well as a student of psychoanalysis in the Berlin institute. Although not a physician, she had had two years of postgraduate medical work at Syracuse before becoming interested in psychoanalysis. She was the author of many articles on psychoanalysis.

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### ERICH BENJAMIN, CHILD PSYCHIATRIST, DIES

Erich Benjamin, widely known European child psychiatrist and an exile from Nazi Germany since 1939, died in his home in Baltimore on April 22, 1943, at the age of 63. Dr. Benjamin was the author of numerous publications in Europe on the subject of child psychiatry and during the last five years had continued his contributions to the medical literature in English in this country.

## HENRY SMITH WILLIAMS, PSYCHIATRIST AND AUTHOR

Henry Smith Williams, M. D., psychiatrist, etcher, painter, and writer on medicine, ornithology and popular science, died in Los Angeles at the age of 80 on July 4, 1943. As a young physician, he had served in what is now Manhattan State Hospital and at the Bloomingdale Hospital and had been medical superintendent of the Randall's Island Hospital. He was a graduate of the Chicago Medical College in 1884 and later studied in London, Berlin and Paris. The wide range of his more than 50 published books may be judged from his collaboration in 1887 on a "Check List of Iowa Birds" to "Your Glands and You" in 1936 and "The Dope Ring" in 1937. Other titles included "The Proteal Treatment of Cancer," "Mental Obliquities, Science and Civilization," "The Effect of Alcohol," "Luther Burbank—His Life and Work," "Etching Is the Ideal Hobby" and a 10-volume work, "The Wonders of Science in Modern Life."

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## MENTAL HYGIENE MOVEMENT PIONEER DIES

Allen Ross Diefendorf, M. D., psychiatrist, member of the Yale Medical School faculty, and author of a number of textbooks, died in New Haven on July 30 at the age of 72. Widely known in forensic psychiatry, he was also a pioneer in the mental hygiene movement and took part in the organization of the first mental hygiene association, that of Connecticut.

Dr. Diefendorf who was born at Savannah, N. Y., graduated from Yale Medical School in 1896. He served on mental hospital staffs at Worcester, Boston and abroad, was a psychiatric specialist at Camp Devens, Mass., during World War I and was consultant in psychiatry for New Haven and Bridgeport hospitals during his quarter of a century on the Yale Medical faculty. His textbooks included "Clinical Psychiatry" and "A Manual of Methods," and he collaborated with Dr. L. Pierce Clark on "Neurological and Mental Diagnosis."

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## WARTIME PUBLICATION RESTRICTIONS

The 1943 volumes of THE QUARTERLY and SUPPLEMENT, completed by this issue of THE QUARTERLY, reflect in size government requests and directives for reduction in our use of paper. The use of wire stitching in reprints is now greatly restricted, in some cases prohibited, and authors must understand that this a matter in which THE QUARTERLY can exercise no discretion.



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